



SPECTRUM OF FUNGAL KERATITIS

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ABSTRACT

Fungal keratitis is a serious ocular infection with potentially devastating visual outcome and a public health problem.

AIM: In this study, an attempt has been made to assess severity of clinical progression.

BACKGROUND: Filamentous fungi such as Aspergillus and Fusarium species are common pathogenic organisms. Ocular trauma with vegetative matter such as a branch of a tree, broom stick injury, is responsible for causing fungal keratitis.

MATERIAL AND METHODS: 28 patients (15 males, 13 females) attending Out Patient department of Corneal services in tertiary eye care hospital and clinically diagnosed as fungal keratitis were included in the study. Corneal scrapings were sent for KOH smear and culture sensitivity. Based on the clinical suspicion antifungal treatment (Natamycin 5%) started depending on the severity of the disease.

STUDY DESIGN: Prospective study.

DURATION OF STUDY: January 2017 to March 2017 (3 Months).

INCLUSION CRITERIA: Patients with history of injury with vegetative matter were included.

EXCLUSION CRITERIA:

Keratitis due to Bacteria, Virus, Non-infectious keratitis were excluded.

RESULTS: KOH smear was positive in 19 patients with culture sensitivity on Sabouraud's Dextrose agar showed fungal growth in all patients after around 3 weeks of culture. Among 28 patients, 15 were males and 13 were females and agricultural workers by occupation with history of trauma with vegetative matter. No age or sex predilection observed. Patients were in varying age group from 20-70 years indicating vegetative matter trauma as the causative factor. 24 patients who had mild to moderate corneal involvement responded to medical corneal involvement responded to medical management. 4 patients had severe corneal ulceration leading to total corneal abscess and required Therapeutic Keratoplasty.

KEYWORDS: Ocular trauma, Vegetable matter, Fungus, Smear and Culture.

INTRODUCTION:

Fungal keratitis or Keratomycosis^{1,2} is an infection of the cornea caused by pathological fungi invading the ocular surface. It typically progresses as a painless slowly progressive corneal ulcer than bacterial counterpart. History of ocular trauma with vegetative matter is reported. Patients may complain of foreign body sensation. Mild redness of the eye, blurring of vision, watering from the injured eye. Clinical diagnosis of fungal keratitis is by the characteristic corneal features on slit lamp examination such as an infiltrate with dry feathery margin, elevated edges, satellite lesions, hypopyon and endothelial plaque. Corneal smears from the lesion are very important before initiating treatment with antifungals.

In warm developing countries, it is wise to start anti-fungal agents on mere clinical suspicion since hot weather promotes rapid fungal growth. The patients may present after many days or weeks after trauma while antibacterial therapy is started in most clinics in periphery, fungal infection may not be considered.

The most practical approach is to examine a scraping from the ulcer for bacteria and fungi. If hyphae and spores are found, treatment should be directed towards fungus.

In the developing countries, fungal cases are very common in the hot summer. Aspergillus is the most common cause of fungal keratitis. Common risk factors for development of fungal keratitis are trauma with vegetative matter, topical Corticosteroid use, Post ocular surgery, agricultural occupations, young healthy males.

MATERIAL AND METHODS:

28 patients (15 males and 13 females) clinically diagnosed as fungal

keratitis were evaluated on slit lamp examination. Detailed history regarding evolution of the disease is recorded with emphasis on history of injury with any vegetable matter. Demographic data recorded. 10% KOH smear and culture sensitivity on Sabouraud's dextrose agar is performed.

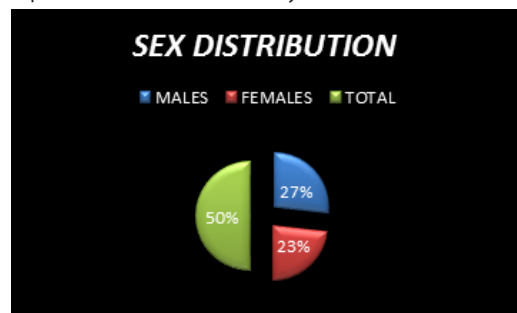
RESULTS:

KOH smear is positive in 19/28 patients. Culture sensitivity on Sabouraud's Dextrose agar showed fungal growth at 3 weeks in all cases.

TABLE -1 Sex Distribution

Males	15
Females	13
Total	28

No sex predilection noted in our study.

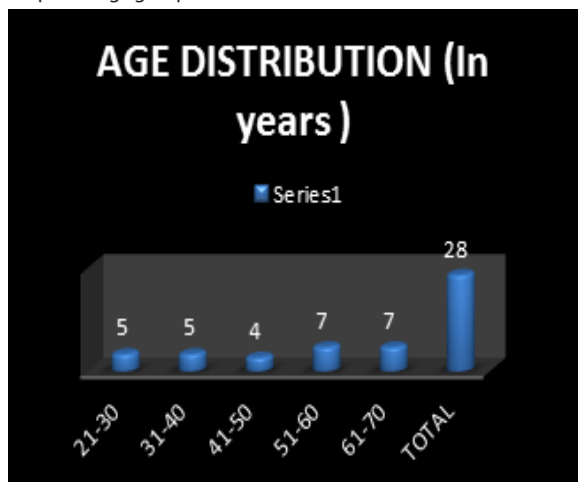


Graph-1 SEX DISTRIBUTION

TABLE-3 AGE DISTRIBUTION (In years)

21-30	5
31-40	5
41-50	4
51-60	7
61-70	7
Total	28

No specific age group observed.

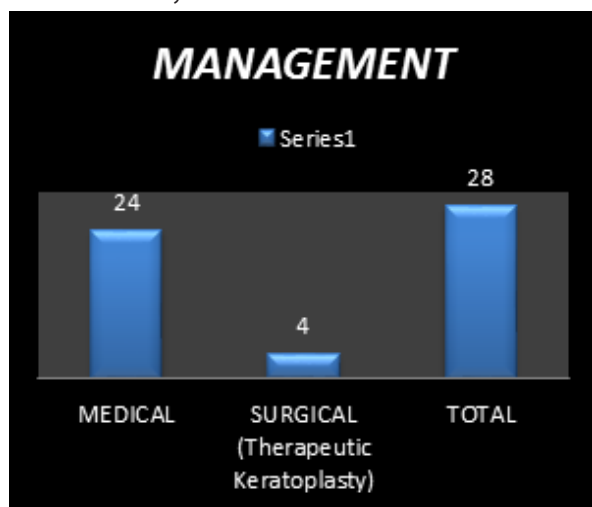


GRAPH--3 AGE DISTRIBUTION (In years)

TABLE-4 MANAGEMENT:

Medical (Fig 1&2)	24
Surgical (Therapeutic Keratoplasty) Fig3&4)	4
Total	28

Early diagnosis of fungal keratitis helps in medical management of the cases effectively.



GRAPH-4 MANAGEMENT

Spectrum of fungal keratitis



FIGURE-1 –Dry ulcer with hypopyon Early stage of ulcer

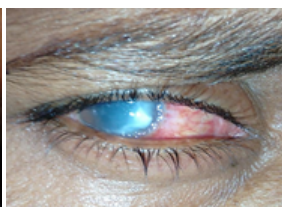


FIGURE-2 –Fungal Cornea ulcer Moderately affected cornea

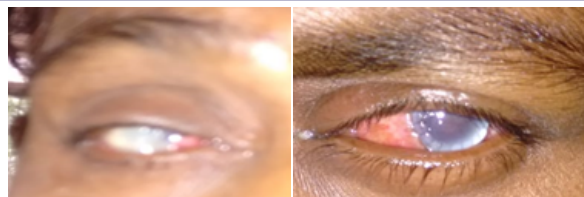


FIGURE-3 –Total cornea ulcer **FIGURE-4** –Post TKP

DISCUSSION:

The infection probably starts when the epithelial integrity is broken either due to trauma or ocular surface disease and the organism gains access into the tissue and proliferates³. Proteolytic enzymes, fungal antigens and toxins are liberated into the cornea with the resulting necrosis and damage to its architecture thus compromising the eye integrity and function. A high degree of suspicion from the physician accounts for early diagnosis and treatment, which are paramount for a successful resolution of the fungal keratitis. Corneal ulcers unresponsive to broad-spectrum antibiotics, the presence of satellite lesions, scanty secretions in a large ulcer are some signs that should raise flags to the attending professional about the possibility of a mycotic agent.

Under the slit lamp, early in the evolution the lesion might look like an unhealed corneal abrasion with scanty infiltrates and no secretions. With time the ulcer develops thicker infiltrates and fuzzy margins. The presence of satellite lesions strongly suggests a fungal infection. Redness and periocular edema are also common. This combined with a history of trauma, especially with vegetable matter, ocular surface disease or chronic use of topical steroids should alert about the possibility of a mycotic etiology. Corneal scrapings are taken from deep into the lesion with a surgical blade or sterile spatula. To perform a corneal biopsy a dermatological 2mm punch can be used.

For a definitive diagnosis scrapings taken from deep into the lesion should be made and inoculated in Sabouraud agar. The shortcoming is that it could take upto 3 weeks to grow and identify the organism. For a faster result, smears with special stains such as Gomori, PAS, Acridine orange, Calcofluor white or KOH should be performed. The drawback is that not all laboratories can handle those, so, again we might need to rely on the patient's evolution and the physician's clinical acumen. If all labs are negative consider a corneal biopsy. In general, management consist of medical therapy with the use of topical and or systemic anti-fungal medications alone or in combination with surgical treatment. Topical antifungals, either commercially available or compounded from systemic preparation into eye-drops are the backbone for the management of fungal keratitis. In resistant cases addition of systemic antifungal have shown effectiveness. If those fail conjunctival flaps, lamellar or penetrating keratoplasty might be needed.

Fungal ulcers are inherently difficult to treat. The diagnosis is often delayed, medications available for ocular therapy are limited and they are deficient in their ability to penetrate deep into the cornea. The mainstay of treatment is the use of antifungal drops Natamycin 5%.

All corneal infections should be followed daily until there is a marked improvement. Since fungal infections run a protracted course, their follow up is longer and after a few days the interval between evaluations increases according to its progress. Complete healing might take weeks and even months.

CONCLUSION:

Early diagnosis and management of fungal keratitis is essential as it limits the visual disability.

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