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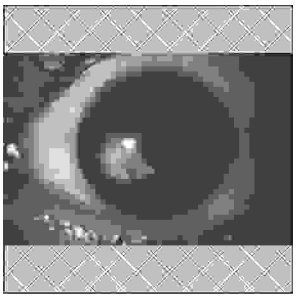

# FUNGAL KERATITIS;
## ROLE OF TOPICAL MICONAZOLE IN MANAGEMENT

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**ABSTRACT... Introduction:** Previously no topical antifungal was available and only dermatological preparation like bifonazole (mycospore) and some systemic antifungal were used for treatment of fungal ulcers. Now miconazole is available as topical ophthalmic ointment for the management of fungal ulcer. **Objectives**: To Study the efficacy of topical miconazole ophthalmic ointment in the management of fungal keratitis and to know the time period required for complete healing with topical miconazole ophthalmic ointment. **Setting:** Department of Ophthalmology, Nishtar Hospital, Multan. **Duration:** One year (from March 2001 to February 2002). **Material and method:** Sample size: 20 patients. **Results:** According to this study of 20 cases it is apparent that the fungal keratitis occurred most frequently in patients between 20-70 years of age. It is apparent those males who work at different places are more prone to disease. Out of 20 cases, 10 (50%) were farmers by occupation. Trauma with fingernail in 1(5%) patient, trauma with stone in 2(10%) patients. No specific eye disease was present in 12(60%) cases. Trachoma was present in 4(20%) cases. Blephritis was diagnosed in 2(10%) cases, 2(10%) patients were suffering from chronic illness like chest infection. Fungal keratitis in 12(60%) was not associated with hypopyon, 6(30%) patients were associated with hypopyon and 2(10%) were associated with end-ophthalmitis. The response was good in 12(60%) patients and satisfactory in 3(15%). Poor response in 3(15%) and there was no response in 2(10%) cases. **Conclusion:** Miconazole ophthalmic ointment is a good drug for the treatment of fungal keratitis.

**Key words**: Fungal keratitis, Miconazole ophthalmic ointment, vegetative ocular trauma.

## INTRODUCTION

Fungal keratitis is an important cause of unilateral blindness. It is less common than bacterial and viral keratitis, but has serious ocular consequences, if not diagnosed and treated in time[1,2]. It is usually caused by vegetative ocular trauma. The first case of fungal keratitis was reported in 1879 by Leber. The incidence of fungal keratitis has increased 15 times due to injudicious use of antibiotics and steroids. The incidence of fungal infection of the eye and the

aetiological agents isolated from corneal ulcer vary according to geographical location and climate. On worldwide basis the keratomycosis is most often caused by aspergillus species 50%, candidal species 25% and many other 25% especially fusarium species[3]. In country like Pakistan, which is an agricultural country, the keratomycosis has increased.

Spontaneous fungal ulcers have been reported in patients suffering from AIDS and is another opportunistic infection in this high-risk group of patients[4]. The poverty, ignorance and poor compliance by patients increase complications of fungal keratitis. If the case is not diagnosed in time and treatment is not started the complication can lead to corneal perforation and permanent visual loss. Therefore, diagnosis of fungal keratitis and its proper management is necessary.

The diagnosis of fungal keratitis is not easy although history and clinical appearance may suggest fungal keratitis. The definitive diagnosis requires confirmation by direct examination and culture[5].

Fungal keratitis presents typically as greyish white lesions with indistinct margins and delicate feathery finger like projection into adjacent stroma. It may be ringed by a greyish halo and multiple satellite small foci[2,6].

Fungi can be identified by corneal scrapings from sides and base of the ulcer in wet preparation in 10% potassium hydroxide or in smear stained by Grocott-gomori method[7].

Thousands of fungal genera have been found but only 35 genera have been found to be associated with corneal infections and among these a few genera predominate[8].

Proportion of fungal keratitis as causative factor in corneal ulcer is sometimes underestimated. In reports from Bangladesh this proportion has varied from 33-40%. In South Florida, fungi accounts for 35%, in South India 44%, and in Nepal 17%. In Accra Ghana it was found that fungi alone were found responsible for 49% for the culture[9].

There are may anti fungals which are used for the treatment of fungal keratitis, but previously no topical antifungal was available and usually systemic[10,11] or in some centers dermatological preparation are being used for management of fungal keratitis such as Bifonazole[12,13]. Dermatological antifungal bifonazole 0.01 g (mycospore) four hourly in eyes are used for 6 weeks[13]. Now a days miconazole nitrate is available as an ophthalmic ointment. This is a synthetic imidazole, phenethyl imidazole. It acts by inhibiting fungal lipid formation. This topical antifungal is being used from 4-5 years in different centers in Pakistan. This is also used in our department for management of fungal keratitis.

## PURPOSE OF STUDY

Previously there was no antifungal available, which was used for topical use. But now-a-days miconazole is available in 2% ophthalmic ointment for topical use for management of fungal ulcer. The purpose of study was to:-

1 Study the efficacy of topical miconazole ophthalmic ointment in the management of fungal keratitis.
2 Know the time period required for complete healing with topical miconazole ophthalmic ointment.

## MATERIAL & METHODS

Suspected cases of fungal ulcers visiting eye output department were admitted in eye ward. Corneal scrapings were taken by instilling topical anesthetic alcain, with insulin syringe bent at approximately 110 degrees under microscope or slit lamp. Those cases, which were positive for fungi, were included. Twenty

cases were included in the study. Study was done in the following way. Proper history regarding the disease was taken.

* Detailed history regarding the complaints of the patient.
* Time of onset and duration of disease at presentation.
* Any history of trauma especially with vegetative material.
* Any history regarding previous medical treatment especially steroids and antibiotics.
* Detailed ocular examination was done.
* Visual acuity of both eyes was recorded.

Following points were noted;

**Condition of lid:** Any abnormality like ectropion, entropion or any swelling/growth like chalazion etc.

* Position of lashes – normal, trichiasis, distichiasis.
* Any sign of trachoma, blephritis.
* Any involvement of conjunctiva.

Corneal examination was done as;

* Area of cornea involved, central, paracentral, peripheral.
* Size of ulcer.
* Shape of ulcer.
* **Depth of ulcer;**
  - a Epithelial
  - b Anterior stromal.
  - c Posterior stromal
  - d Descemetocele
  - e Perforation

* Condition of ulcer

* Elevated dry grey ulcer.
* Any satellite lesion away from the main lesion.
* Any associated corneal edema.
* Cornea sensitivity was noted.
* Presence or absence of endothelial plaques.
* Presence or absence of hypopyon.
* Activity in the anterior chamber as

  5-10 cells = +1
  11-20 cells = +2
  21-50 cells = +3
  > 50 cells = +4

Fundoscopy with direct or indirect ophthalmoloscope was done in those cases where fundus detail was available. IOP was assessed digitally. Those cases, which were positive for fungi, were included in the study.

Topical miconazole ophthalmic ointment was used six hourly. Topical antibodies were used to avoid superadded infection. Supportive therapy for healing of ulcer was given. The cases were studied for improvement or worsening of the condition. The follow-up was done on weekly basis upto 3 months. Criteria for improvement of corneal ulcer was based on healing of corneal ulcer reduction in size of ulcer and improvement in visual acuity.

## RESULTS

In present study, the efficacy of topical miconazole ointment was studied. According to this limited study of 20 cases it is apparent that the fungal keratitis occurred most frequently in patients between 20-70 years of age (Fig-1).

All the cases studied were male. So it is apparent that male who work at different places are more prone to disease (Fig-2).

Fig-3 shows that out of 20 cases, 10(50%) were farmers by occupation. The labourers were the next victims of the disease being 5(25%).

There was typical history of trauma in 12(60%) patients. Trauma with finger nail in 1(5%) patient, trauma with stone in 2(10%) patients. There was no typical history of trauma in 4 cases. This shows that there is strong association of fungal keratitis with vegetative ocular trauma (Fig-4).

**Table-I. Associated ocular disease**

| Disease | No of pts | %age |
|---|---|---|
| No ocular disease | 12 | 60% |
| Trachoma | 4 | 20% |
| Chronic illness, chest infection | 2 | 10% |
| Blephritis | 2 | 10% |

Table-I revealed that no specific eye disease was present in 12(60%) cases. Trachoma was present in 4(20%) cases. Blephritis was diagnosed in 2(10%) cases, 2(10%) patients were suffering from chronic illness like chest infection. Most of the patients were smokers.

**Table-II. Distribution on the basis of severity of ulcer**

| Factor | No. of pts | %age |
|---|---|---|
| Without hypopyon | 12 | 60% |
| With hypopyon | 6 | 30% |
| End-ophthalmitis | 2 | 10% |

Table-II shows that fungal keratitis in 12(60%) was not associated with hypopyon, 6(30%) patients were associated with hypopyon and 2(10%) were associated with end-ophthalmitis.

Table-III shows that laboratory reports proved the high prevalence of aspergillus 9(45%), followed by candida 4(20%) and fusarim 4(20%) of cases. The mucor was less common. This shows that most common cause of fungal keratitis is aspergillus, candida and fusarium.

**Table-III. Response to drug**

| Response | No. of pts | %age |
|---|---|---|
| Good response | 12 | 60% |
| Satisfactory response | 3 | 15% |
| Poor response | 3 | 15% |
| No response | 2 | 10% |

The response was good in 12(60%) patients and satisfactory in 3(15%). Poor response in 3(15%) and there was no response in 2(10%) cases. The average time of healing of ulcer was 27 days (Table-IV).

**Table-IV. Culture findings**

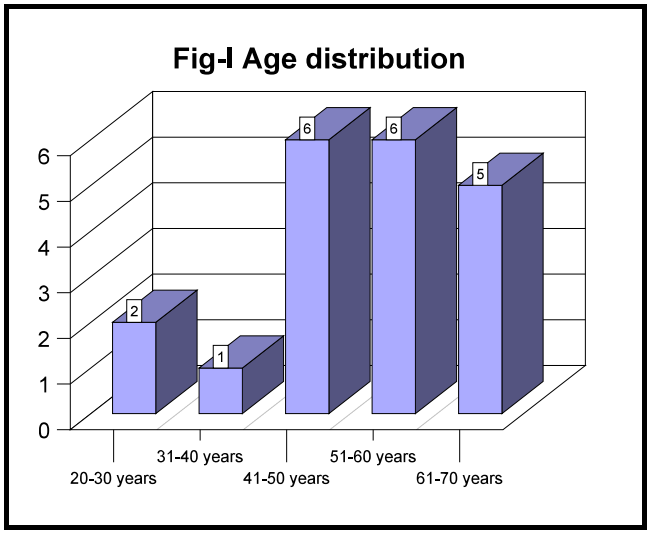
| Findings | No of pts | %age |
|---|---|---|
| Aspergillus | 9 | 45% |
| Fusarium | 4 | 20% |
| Candida | 4 | 20% |
| Mucor | 3 | 15% |

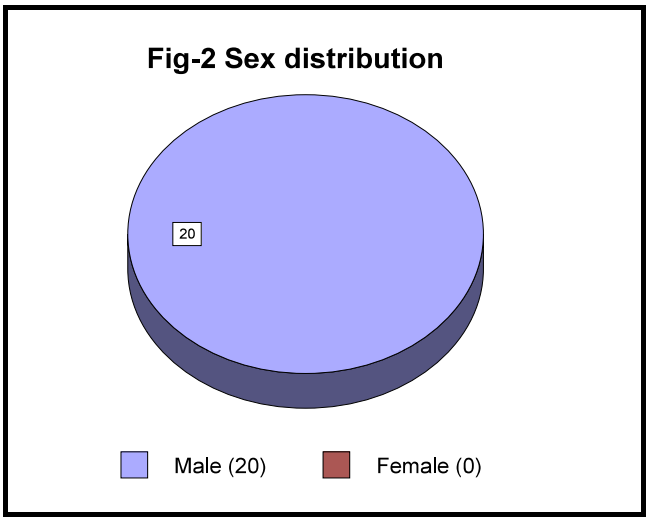
## DISCUSSION

In Pakistan, which is an agricultural country, the fungal keratitis is one of the leading causes of the unilateral blindness. In most of the patients the cause of fungal ulcer was trauma with vegetative material in those persons who work in the fields, farms or gardens or dealing directly or indirectly with vegetative material. The males are highly at risk. Probably in our society males are mostly involved in outdoor activities and so are at greater risk to get trauma.

The occupation of the patients also reveals that most are working in fields or they are labourer by occupation. The patients at top of the list were farmers 10(50%), then labourer 5(25%) and the venders 2(10%) and mali 2(10%). All these persons were in fields or involved directly or indirectly with vegetative material. Literacy and poverty also create problems.

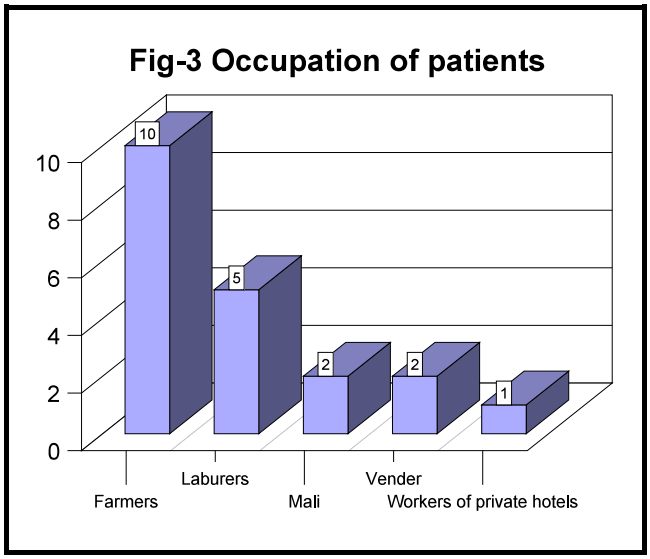
Another thing to quackery, which aggravate the condition. Usually patients consult quacks and do not consult ophthalmologist in the beginning.

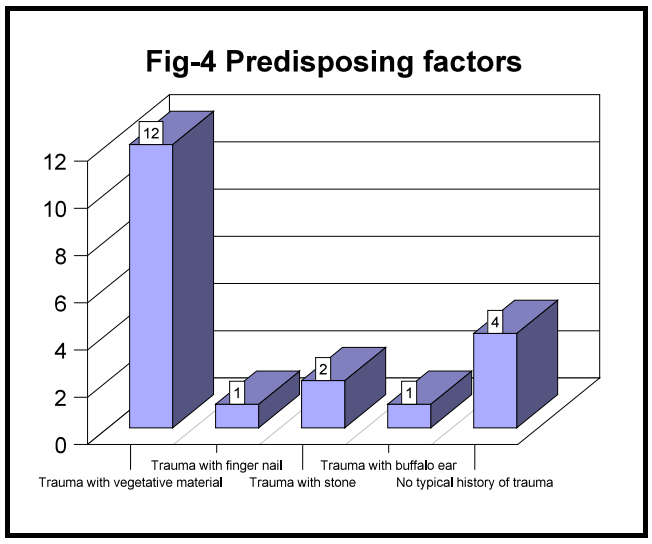



In present study, for species of fungi were seen i.e. aspergillus, fusarium, candida and mucor. They were present in percentage of 45%, 20%, 20% and 15% respectively. So in this study aspergillus was the main cause of keratomycosis.

As far as the treatment is concerned, we have used a newly available antifungal miconazole, which is a synthetic immidazole available as ophthalmic ointment. It acts by inhibiting formation of fungal cell wall lipids. It was used 6 hours.




Along with this topical antibiotics were used and supportive therapy was added. It is found very effective in those cases in which the fungal keratitis was not associated with hypopyon and severe anterior chamber

reaction. It also showed good results in 3(15%) patients out of 6(30%) patients having hypopyon. In other 3(15%) cases topical antifungal ketoconazole and systemic antibiotics added. This is not effective in cases of end-ophthalmitis. So in present study it was found that topical miconazole ophthalmic eye ointment is a good alternative to other antifungal preparation such as dermatological preparation. Bifonazole (myocospore), which is being used by different ophthalmologists. The average time of healing was 26-27 days. It is a good drug for superficial fungal keratitis and less effective for deep keratitis. Although some patients complain of ocular irritation, still this is good drug for treatment of fungal keratitis.

## CONCLUSION

1. Keratomycosis is not a rare disease. It is a cause of unilateral blindness if not diagnosed and treated in time.
2. It mostly occurs between the age of 21-70 years and is more prevalent between 41-70 years.
3. The males are more victimized.
4. Disease is more common in those working in fields and farms and gardens.
5. It is also more common in labourers with poor socio-economic status.
6. Trauma with vegetative material is most common triggering factor.
7. Aspergillus, fusarium, candida and mucor are common fungi causing kertomycosis.
8. Miconazole is available as ophthalmic ointment used as topical antifungal.
9. Miconazol which is commercially (available as) ophthalmic ointment is good alternative in most of cases of fungal keratitis.
10. It is less effective in deep keratomycosis and in cases of endopthalmitis.

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