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RESEARCH ARTICLE

STUDY OF CLINICAL PROFILE AND RISK FACTORS OF INFECTED CORNEAL ULCERS AT RURAL TERTIARY CARE HOSPITAL

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Abstract

Introduction: A corneal ulcer is a discontinuation in normal epithelial surface of cornea associated with necrosis of the surrounding corneal tissue. It is a major worldwide cause of preventable corneal blindness that is mostly under-reported but can be responsible every year for 1.5– 2.0 million new cases of monocular blindness. Detailed studies of severe sight-threatening infectious keratitis are therefore important as they provide valuable information on the detection of etiology, predisposing factors, and visual outcomes to form the development of management strategies and protocols.

Aims and Objectives: To study the clinical profile and known risk factors of infected corneal ulcers at rural tertiary care hospital.

Materials and Methods: An Observational, Descriptive Cross-Sectional Hospital-based study was conducted after Institutional Ethical Committee (IEC) at the Department of Ophthalmology, DVPRMC, Loni. A total of 70 patients with infected corneal ulcers were screened and evaluated from June 2022 to May 2023 for a duration of 1 year. We studied the infected corneal ulcer patients above 18 years old attending to our hospital OPD. Results: 57% of patients were male and 43% were female. 66% of patients gave a history of trauma. The most common clinically diagnosed ulcer was fungal, representing 53% of all ulcers, followed by bacterial (27%) and viral (13%). There were also 2 cases each of acanthamoeba (3%) and pythium (3%) ulcers. 62.8% of cases were above 50 years old. In our study 73% of suspected fungal corneal ulcers were KOH smear-positive and 70% of suspected bacterial corneal ulcers were gram-positive. All cases were advised medical management. Out of those 43% were also advised therapeutic penetrating keratoplasty.

Conclusion: Corneal ulcers are commonly seen in adult male farmers and laborers with ocular trauma in rural areas and fungal ulcer is the most common type of ulcer. Late presentation with corneal perforation requires therapeutic penetrating keratoplasty.

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Introduction:-

A corneal ulcer is a discontinuation in normal epithelial surface of cornea associated with necrosis of the surrounding corneal tissue(1).Pathologically, it is characterized by oedema and cellular infiltration.

It is a major worldwide cause of preventable corneal blindness that is mostly under-reported but can be responsible every year for 1.5–2.0 million new cases of monocular blindness(2). The annual incidence was conservatively estimated to be 11.3 per 10,000 population(3). In developing countries like India, corneal ulcer is the leading cause of blindness and visual disability, ranked next to cataracts. Corneal ulcers tend to exist in epidemic proportions in the developing world, ten times more common than in developed countries.

Ulcers start as keratitis (inflammation of the cornea) after a break in the corneal epithelium allows bacteria to enter. These breaks are most commonly due to contact lens wear, corneal abrasions, and other ocular trauma(4). Other risk factors include diabetes, prior ocular surgery, chronic ocular disease, use of corticosteroids, contaminated ocular medications, and agricultural work(5).

Microbial keratitis is an important preventable cause of monocular blindness worldwide. Early identification of the causative microorganisms and starting adequate antimicrobial agents are crucial for good treatment results(6).

Culture negative corneal ulcers are associated with long duration of topical medications(7). Therefore, clinical diagnosis of corneal ulcers is also important in the management of corneal ulcers.

Detailed studies of severe sight-threatening infectious keratitis are therefore important as they provide valuable information on the detection of etiology, predisposing factors and visual outcomes to form the development of management strategies and protocols.

Aim:-

To study the clinical profile and risk factors of infected corneal ulcers atRural Tertiary Care Hospital

Objectives:-

1. To study the clinical profile and known risk factorsin infected corneal ulcer patients visiting Rural Tertiary Care Hospital
2. To study the OPD investigative modalities in infected corneal ulcer patients visiting Rural Tertiary Care Hospital

Inclusion Criteria

1. All adult patients of infected Corneal ulcers attending Rural Tertiary Care Hospital
2. Patients willing to give written informed consent to participate in the study

Exclusion Criteria

1. Patients below 18 years of age
2. Non-infected corneal ulcer

Materials And Methods:-

An Observational, Descriptive Cross-Sectional Hospital based study was conducted after Institutional Ethical Committee (IEC) approvalat the Department of Ophthalmology, DVPRMC, Loni. Atotalof 70 patientswithinfected corneal ulcerswerescreenedandevaluated from June 2022 to May 2023 for a duration of 1 year. We studiedtheinfected corneal ulcer patientsabove 18 years old attendingourhospital OPD. KOH and Gram stain reports were noted. On clinical diagnosis, the patients were advised medical and surgical management.

Results:-

Age Group

AGE GROUP	NUMBER OF CASES	PERCENTAGE
18-30	10	14.2

31-40	**8**	**11.4**
41-50	**8**	**11.4**
51-60	**16**	**22.8**
61-70	**14**	**20**
71-80	**14**	**20**

62.8% of cases were above6th decade.

Occupation

OCCUPATION	NUMBER OF CASES	PERCENTAGE
FARMER	**44**	**66%**
LABOURER	**14**	**17%**
STUDENT	**8**	**11%**
BUSINESSPERSON	**4**	**6%**

44 patients (66%) were farmers and 4 patients (6%) were businessperson.

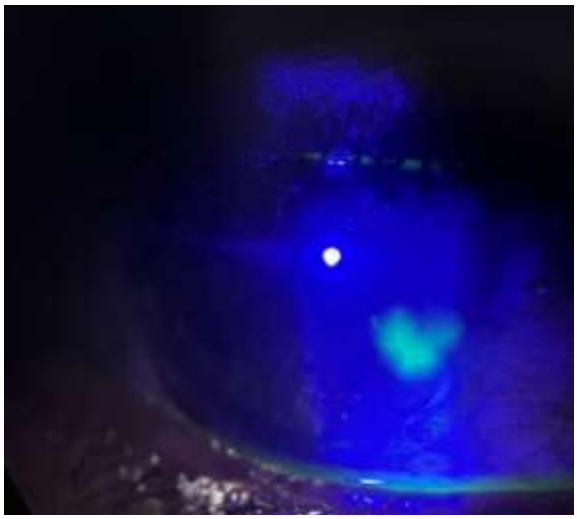


Figure 1:- Viral ulcer showing dendritic pattern.

Figure 2:- Fungal ulcer with immobile convex hypopyon.

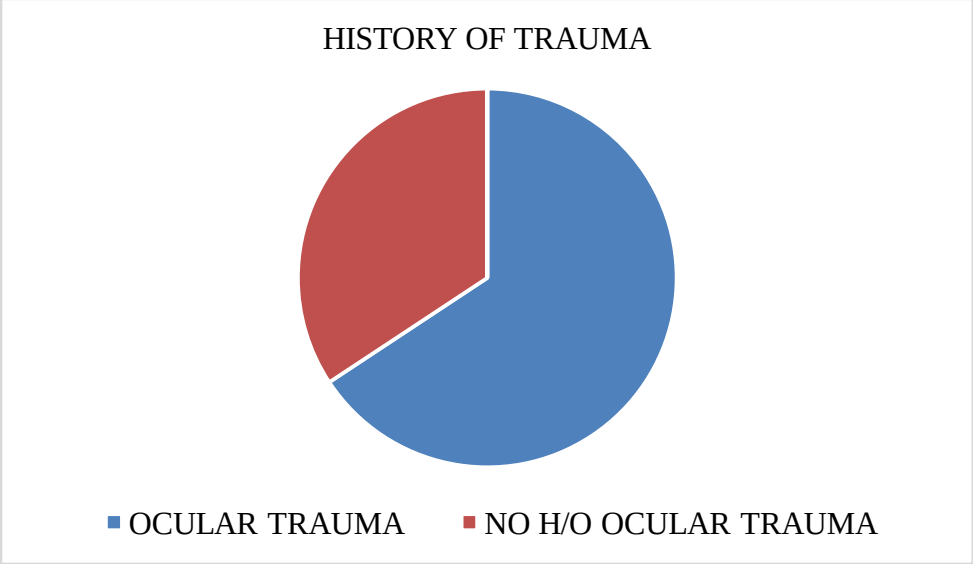
Figure 3:- Bacterial ulcer showing mobile streak hypopyon.

Corneal Ulcer Type

TYPE OF ULCER	NUMBER OF CASES	PERCENTAGE
FUNGAL	38	53%
BACTERIAL	20	27%
VIRAL	8	13%
ACANTHAMOEBA	2	3%
PYTHIUM	2	3%

The most common clinically diagnosed ulcer was fungal, representing 53% of all ulcers, followed by bacterial (27%) and viral (13%). There was also 2cases each of acanthamoeba (3%) and pythium (3%) ulcers.

History Of Trauma



A history of ocular trauma was present in 46 (66%) cases.

Discussion:-

Age

62.8% of cases were above 50 years old whereas(37.2%) of cases were below 50 years old.

Bharathi MJ et al. concluded in their study that patients above the age of 50 years (60.2%) were significantly (P<0.0001) more than patients below 50 years (39.8%)(8). This could be attributed to a lower level of immunity with increasing age and thus, rendering chances favorable for pathogens to cause corneal ulcers.

Gender
In our study out of 70 patients, there were 40 males (57%) and 30 females (43%). VC Poria in his study of 100 cases of clinically suspected mycotic keratitis found that 51 % were males and 43 % females(9). Bharathi MJ et al. found out that out of 1043 patients, 56.78 % were males and 43.24 % were females(8). Hence, it was seen that the incidence of corneal ulcers is more in males as compared to females because of more indulgence of males in fields, industries and other labour works for livelihood.

Occupation
In the present study of 70 cases, it came to light that the most common sufferers were farmers engaged in agricultural work (66%), followed by laborers (17%),students (11%), and businesspersons (6%). The farmers are exposed to open field works, dust, sand, vegetative matter, hot and humid environments. Trauma from vegetative matter, wooden particles, sand and stone injury is not so uncommon in farmers. Working with cattle also carries a risk of tail, and horn injuries.

Corneal Ulcer Type
The most common clinically diagnosed ulcer was fungal, representing (53%) of all ulcers, followed by bacterial (27%) and viral (13%). There were also 2 cases each of acanthamoeba (3%) and pythium (3%) ulcers. Byrd LB concluded that viral keratitis as well as the most common cause of unilateral infectious corneal blindness in the developed world and fungal etiologies account for only 5 to 10% of all corneal infections(10).All of the subjects in our study were from rural areas. When working in fields, people are more likely to sustain traumatic corneal abrasions from vegetative sources. As most patients presenting with ulcers are farmers or laborers, the fungal ulcer is the most common type of ulcer prevalent in rural areas.

Microbiological profile
In our study 28 cases (73%) of suspected fungal corneal ulcers were KOH smear-positive. Jain et al concluded that the KOH smear from direct corneal scrapings were positive in (70%)(11).

In our study 14 cases (70%) of suspected bacterial corneal ulcers were gram-positive. Al-Mujaini et al concluded that gram stain can identify the pathogen in 75% of cases(12).

Advised Management
All cases were advised medical management. Out of those28 cases (43%) were also advised therapeutic penetrating keratoplasty.Irrational and improper use of medication and topical corticosteroids, all of which contribute to an aggravation of infection and worsening of corneal ulcer; this results in patients in rural areas either seeking advice much later or going to local quacks and reporting to hospitals mostly when their condition worsens. As this is a tertiary hospital in rural area many patients come late after undergoing treatment in other centres and require surgical intervention like therapeutic keratoplasty.

Conclusion:-
Corneal ulcers are commonly seen inadult male farmers and laborers with ocular trauma in rural areas and fungal ulcer is the most common type of ulcer.

Late presentation with corneal perforation requires therapeutic penetrating keratoplasty.

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Nil.

Conflicts Of Interest
There are no conflicts of interest.

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