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A study on demographic profile and predisposing factors of corneal ulcer in South India

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ABSTRACT

Objectives: To study the epidemiological characteristics and predisposing factors of infective corneal ulcer.
Materials and Methods: 222 cases fulfilling the inclusion criteria were recruited for the study. A standardised proforma was used to record demographic data like, age, sex, occupation, rural/urban background and relevant history like associated ocular and systemic disorders, history of corneal injury, previous treatment and duration of symptoms. Statistical analysis was done using SPSS 22 software for chi square test.
Result: 222 cases of infectious corneal ulcer was enrolled to the study out of which 138 (62.16%) were males and 84 (37.83%) were females. Out of the total, 132 (59.45%) were hailing from rural and 90 (40.54%) were hailing from urban background. Mean age of presentation was 52.009 years with standard deviation 12.26. 45.44% were farmers. 21.62% patients were diabetic. Ocular trauma was the most common predisposing factor, which was present in 24.32% (n=54). There was statistically significant association between trauma with vegetative matter and fungal corneal ulcer (p=0.004).
Conclusion: These findings are in consensus with the epidemiological characterstics and predisposing factors in our geographic zone. Large number of fungal keratitis is associated with agriculture based economy, inadvertent use of steroid drops which implies lack of awareness.

1. Introduction

Corneal ulcers defined as a defect in corneal epithelium with infiltration of underlying and surrounding stroma associated with signs of inflammation (with or without hypopyon with superadded infection).[1] Microbial keratitis is a potentially sight threatening disorder. It is one of the leading cause of monocular blindness in the world.[2] It is estimated that, in developed countries like United States, the incidence of corneal ulcer is 28 per 1,00,000 person per year.[3] According to the National Programme of Prevention and Control of Blindness, 2019-2020 statistics, 18.7 million people are blind. Prevalence of blindness in India is 1.3%. Corneal blindness constitutes 15.3%, out of which corneal ulcer comprises to about 9.3%.

Factors like ocular trauma, pre-existing ocular disease, contact lens usage, ocular surface disease are considered to be the predisposing factors of the disease. Corneal ulcer is an ophthalmic condition that requires prompt medical attention. However, factors like lack of medical awareness, inaccessibility to medical treatment (rural background), usage of traditional medicines by untrained people leads to progression of corneal ulcer and delay in healing.[4] Hence, an understanding of the epidemiologic characteristics and risk factors are important in rapid recognition, timely institution of therapy and optimal management of disease.[5] In this study we aim to evaluate the demographic profile and predisposing factors of corneal ulcer in detail.

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2. Materials and Methods

This is a prospective descriptive study conducted among the patients having clinical features consistent with corneal ulcer during the period between November 2018 and May 2020, at Minto Ophthalmic hospital, Bangalore. 222 patients with corneal ulceration with or without hypopyon was selected for the study. All the ulcers with typical characteristic features of neurotrophic ulcer, shield ulcer, marginal ulcer and autoimmune association were excluded. Informed and written consent was obtained from all the patients. A standardised proforma was used to record demographic data like, age, sex, occupation, rural/urban background and relevant history like associated ocular and systemic disorders, history of corneal injury, previous treatment and duration of symptoms. Statistical analysis was done using SPSS 22 software for chi square test.

3. Results

222 corneal ulcer patients were enrolled into the study, out of which 138 (62.16%) were males and 84 (37.83%) were females. Mean age was 52.009 years and standard deviation was 12.26. 27.92% (n=62) belonged to the age group between 41-60 years. Out of the total, 132 (59.45%) were hailing from rural and 90 (40.54%) were hailing from urban background. Majority of the patients in our study was farmers- 45.44% (n=98). Other occupation groups include labourers (27.92%), house wives (18.01%), welders (5.4%) and students (3.6%). The most common systemic disease associated was diabetes mellitus (21.62%, n=24). 13.51% (n=30) were hypertensives, 6.30% (n=14) had coronary artery disease, 3.60% (n=8) had HIV, 1.8% (n=4) had Hepatitis B, 3.6% (n=8) had chronic kidney disease, 4.5% (n=10) had anaemia and 45.04% (n=100) had no systemic illness.

Ocular trauma was the most common predisposing factor, which was present in 24.32% (n=54). There was statistically significant association between trauma with vegetative matter and fungal corneal ulcer (p=0.004). Ocular foreign body was present in 14.41% (n=32) cases, blepharitis was present in 13.51% (n=30) cases, dry eye was present in 6.3% (n=14) cases, lash abnormality in 4.5% (n=10) cases and dacryocystitis in 3.6% (n=8) cases. 29.72% (n=66) had no ocular predisposing factors. Out of 172 patients involved in occupations having high risk of ocular trauma, 89.5% (n=154) did not have the habit of wearing protective goggles at all.

Most of the patients presented to hospital from 3 days- 1 week of symptoms (38.7%, n=86). The mean duration was 12.89=/-9.81 days. 45.94% (n=102) patients were using antimicrobial drops before presenting to us. There is statistically significant association between prior use of antimicrobials and increased number of culture negatives (P=0.0007). 26.12% (n=58) was referred from other Ophthalmologists to us, 20.72% (n=46) consulted general practitioners previously, 2.7% (n=6) had used traditional medicines and 49.54% (n=110) had no previous consultation.

4. Discussion

Microbial keratitis is a potentially sight threatening disorder and the leading cause of monocular blindness worldwide.[2] According to National Programme of Prevention and 56 of Blindness corneal blindness there are 18.7 million blind people in India. The incidence of corneal blindness is 15.4%, of which corneal ulcer contributes to 9.34%.[6]

In our study, 62.16% (138) patients were males. This is consistent with the findings of other studies conducted in tropical developing countries.[7–9] Men are affected more due to the fact that men are involved in occupations having high risk of eye injury like agriculture and manual labour. But studies conducted in developed world[10–13] shows that sex distribution is 1:1 pointing more women in the workforce. We found 32.43% (72) of the patients belonging to the 5th decade of life. Similar studies conducted from other parts of India[14–17] supports this finding. 59.45% (132) of the patients presented to us were from rural background. This is being supported by Nadiya et al[18] who observed 61% of the patients to be from rural background. 21.62% (48) cases had diabetes mellitus similar to the findings observed by Nadiya et al[18] in which 29% of the patients had diabetes mellitus.

45.44% (49) of the patients were farmers by occupation followed by 27.92% (62) labourers and 18.01% (40) housewives. As per the findings of Sashi Gandhi et al[6] 36% cases are farmers followed by 23% cases of labourers and 18% housewives. The most common ocular predisposing factor was ocular trauma and foreign body which affected 38.73% (86). Sadiya Sethi et al[4] observed that ocular trauma occurred in 39% (78) of the cases. The correlation between trauma and fungal keratitis was significant. This finding is backed by several other studies[19–24] (p<0.001). Lixin Xie et al[25] also reported 51.2% (334) cases reported after 1 week of the onset of symptoms. The patients were referred late from physicians or patients reported late.

Alarmingly, out of 172 patients involved in occupations having high risk of ocular trauma, around 90% did not have the habit of wearing protective goggles. Furthermore, significant number of patients (20.72%) have consulted general practitioners for an ophthalmic emergency like corneal ulcer. 6 of our patients resorted to traditional medicines like oil application, dry plant powder or milk before presenting to us. Traditional eye medicine causes further corneal damage by its toxic effects as well as introduction of microorganism causing secondary infection.[26–28] Almost half of the patients were using antimicrobial eye drops before presenting to us. This was associated with culture negativity (p=0.0007) and posed a management challenge.

5. Conclusion

These findings are in consensus with the current trend of demographic profile of corneal ulcer in our geographical zone. Creating proper awareness regarding the need of wearing protective goggles while working in high risk environments as well as discouraging over the counter usage of ocular medications are need of the hour.

6. Source of Funding

None.

7. Conflict of Interest

None.

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