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Clinical Study on Profile Etiology Risk Factors of Corneal Ulcer with Spectrum of Bacterial and Fungal Effects in a Tertiary Care Hospital of North India (UNNAO)

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ABSTRACT
Corneal ulcer is defined as disruption of epithelium with infiltration in surrounding and underlying stroma. In many of the developing countries in the world, corneal ulcer plays a major role in mono-ocular blindness and visual disability. It affects all age groups, both men and women worldwide. Corneal ulcer is more commonly, a seriously infective condition which needs immediate and timely medical attention, to avoid visual disability in future. The demographic of various corneal ulcers with etiology, risk factors and its clinical presentation of our study aim. After completion our study we found as an resultant, male are more affected comparatively female with the age group of 4th and 5th decade of life and most common disposing factors plant and metal foreign body injury that's causes corneal ulcer so farmers more affected followed by labor class and concluded in our study, Corneal ulcer is an ophthalmic emergency. In a developing country like ours, the impact of corneal blindness is huge. Subjecting corneal scraping samples for microbiological investigation is crucial for instituting appropriate treatment. Creating awareness among public regarding eye hygiene will go a long way in avoiding corneal blindness.

INTRODUCTION

Corneal ulcerations is the most common cause of preventable blindness, second only to cataract in developing countries[1-3]. Prevalence of corneal blindness is expected to increase from 0.66% [2001] to 0.84% in 2020[4]. The factors that have been held responsible for this increasing incidence of fungal keratitis include widespread use of broad spectrum antibiotics and steroids, prolonged use of contact lens and the growing number of corneal surgeries being performed. Mycotic keratitis accounts for 30-62% of all culture positive infectious keratitis in several Indian studies[5,6]. Thus proper knowledge about the causative agents and various susceptible factors will be very much useful in appropriate management of the patients with corneal ulcer. It can be either infective or non infective. Infective corneal ulcers are more prevalent than non infective causes. It can be either infective or non infective. Infective corneal ulcers are more prevalent than non infective causes. Infective causes may be bacterial, viral, fungal, parasitic[7]. Non infective causes may be traumatic, due to exposure, due to decreased corneal sensation. Patient usually presents with sudden onset of pain, redness, watering, and defective vision. Usually patients have history of trauma, fall of dust, or eye rubbing. If the ulcer is small and immune status of patient is good, ulcer heals fast, if associated with systemic illness or old age, with immune-compromised state, it usually progresses. Infectious keratitis is a serious concern for ocular morbidity in a developing country like ours[8]. It can lead to a variety of ocular complications a major proportion of which is preventable, if intervened early. Though a variety of technological advancements have revolutionized ophthalmology, managing corneal ulcers is still a difficult. As the treatment requires usage of topical medications for prolonged periods, the cost factor and socioeconomic status of the patient plays a huge role in the management and recovery. In this study, we analyze the incidence, etiological and epidemiological factors, clinical and microbiological profile of the patients in a large tertiary eye center over a period of one year.

Aims and Objectives: To study the demographic of various corneal ulcers with etiology, risk factors and its clinical presentation along with bacterial and fungal effects.

MATERIALS AND METHODS

This Prospective observational study conducted over a period of year. 50 patients with the age group 20-60 years both genders male and female included, who presented with various forms of infectious corneal ulcers reported in the departmental of ophthalmology, Saraswati Medical College unnao, U. P. In this study, all infectious corneal ulcers were included. From all patients detailed history such as clinical examination followed by demographic details was recorded after taken consent. Everyone was subjected to detailed anterior segment examination with slit lamp bio-microscopy and findings were documented by a single observer. After that corneal scraping was done and sent for gram staining and KOH mount with the collaboration of microbiology department. Patients' stay in the hospital was documented and the complications/recovery were monitored. All patients were followed up consecutively after the initial examination was done. Further follow up visits was decided on a case-by-case basis, depending on disease severity.

RESULTS AND DISCUSSIONS

A total of 50 patients who presented to the departmental Opthalmology OPD, Saraswati Medical College, Unnao Uttar Pradesh were included in this study. 33 (66%) patients were males and 17 (34%) were females as showing in graph 1, with the age group of 20-60 years considered and distributed as showing in graph 2 in which age group 20-30 has 2 subjects, 31-40 age group has 5 subjects, 41-50 age group has 18 subjects and age group 51-60 age group has 12 subjects. The Majority of them (9/50) were labour and farmers (17/50), Mechanic (3/50), Drivers (5/50) and others (16/50) in which included minor and major category of businessman by occupation as showing in graph 3. Study showed that illiterate (26/50) were more commonly associated with corneal ulcer. People coming from rural areas (35/50) and urban (15/50) were commonly associated as showing Fig. 4. On analyzing the location of ulcer, we found in our study majority (27/50) patients presented with central corneal ulcer, 10 patients had para-central corneal ulcers and 13 patients presented with peripheral corneal ulcer as showing graph in 4. One of the predisposing factors, Diabetes mellitus was studied in all patients. A majority of them (37/50) were diabetic. We studied the duration of presentation (34/50) many patients had hypopyon as showing in graph 5. 42 patients gave a definite source of traumatic agent, with plant material, metal foreign body and animal etc, in which injury by plant being the most

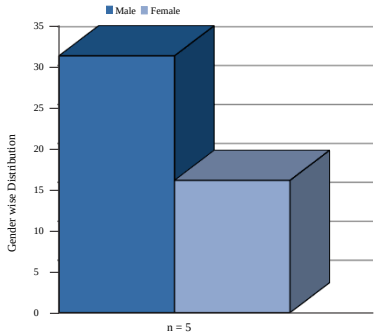

Fig. 1: Showing gender distribution of subjects

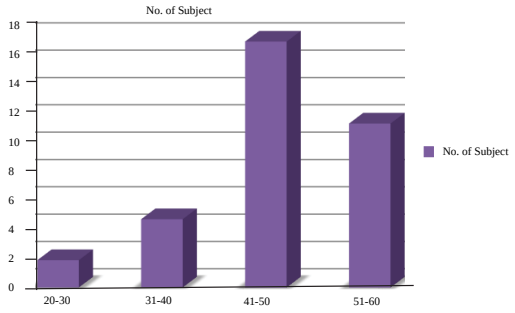

Fig. 2: Age group wise distribution of subjects

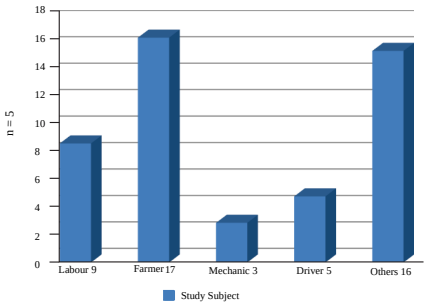

Fig. 3: Showing Subjects distribution on the basis of occupation

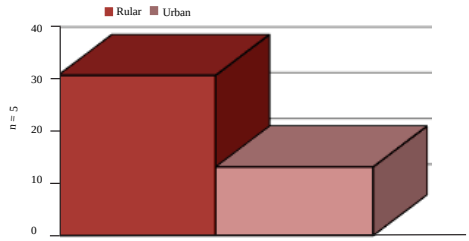

Fig. 4: Showing distribution of subjects on the basis of region (Area)

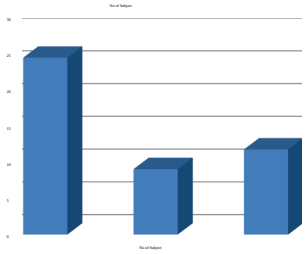

Fig. 5: Location of corneal ulcer

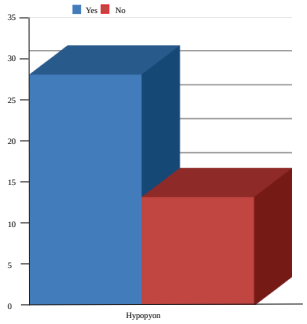

Fig. 6: Showing hypopyon present of absent in no. of subjects as yes or no

common offending agent (14/50). 8 patients did not know the offending agent. With syringing, we observed that in 50 patients in whom 32 cases had positive culture positive and 18 cases found as negative, bacterial colonies could be recovered in 4 patients. Fungal colonies were grown in 6 patients, who were KOH positive in staining. Mixed bacterial and fungal colonies were found in 14 patients. Pure bacterial colonies were isolated in 4 patients. The remaining 4 patients had acanthamoebal growth in staining and culture methods. None of them were contact lens users. With successful medical management, 23 patients responded well, some of them needed intrastromal voriconazole injections. 26 patients progressed to perforation/impending perforation, inspite of all modalities of medical management, required Therapeutic keratoplasty. Only one patient required re-graft due to multiple re-infections. This was found to be significantly higher according to treatment time duration in those patients who presented late and had mixed organisms in microbiological analysis.

CONCLUSION

Trauma is one of the important causes for corneal blindness, thus its spectrum covers all age groups, with greatest impact on the younger age group. Infectious keratitis presents early in the course of the disease since it causes painful defective vision. If appropriately managed, vision threatening complications can be limited to a great extent. Microbial keratitis is a potentially sight threatening disorder and the leading cause of monocular blindness worldwide[9]. 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%[10]. In our study, 66.00% (33) patients were males and 34.00% (17) were females. This is consistent with the findings of other studies conducted in tropical developing countries by Gandhi *et al*, Das *et al.* and Baruah *et al*.[11,12,13] Men are affected more comparative women, due to the fact that men are involved in occupations having high risk of eye injury like agriculture and manual labour as similar studies conducted in developed world by Eric *et al*, Schacfer *et al,* Wong *et al.* and Liesegang *et al.*[14,15,16,17]. We found 36% (18) of the patients belonging to the 4th and 5th decade of life. Similar studies conducted from other parts of India by Vyas *et al*, Kunimoto *et al.* [18,19] supports this finding. In our study, 70% (35) of the patients presented to us were from rural background. This is being supported by Nadiya *et al.*[20] conducted their study in which found 61% of the patients to be from rural background that's similar to our study. 74% (37) cases had diabetes mellitus similar to the findings observed by Nadiya *et al.*[20] in which 29% of the

patients had diabetes mellitus that's higher in their study. In our study, 34.00% (17) of the patients were farmers by occupation followed by 18% (9) laborers. As per the findings of Sashi Gandhi *et al.*[10] 36% cases are farmers followed by 23% cases of labourers. The correlation between trauma and fungal keratitis was significant. This finding is backed by several other studies[21]. Corneal ulcer is an ophthalmic emergency. In a developing country like ours, the impact of corneal blindness is huge. Subjecting corneal scraping samples for microbiological investigation is crucial for instituting appropriate treatment. Creating awareness among public regarding eye hygiene will go a long way in avoiding corneal blindness.

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