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## Original Article

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# Prevalence and risk factors of corneal ulcers among patients in a tertiary care hospital

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Received: 12-12-2016

Accepted: 01-04-2017

### ABSTRACT:

**Background:** Corneal ulcer constitutes a major cause of loss of vision all over the world. There are many factors which contribute to corneal ulcer. Hence the epidemiology is complicated. Many infectious agents are also involved as causative agents. They cause corneal scarring which lead to loss of vision. The prevalence is different for different countries. Trauma or injury to eye is the most common risk factor. And this factor is mostly under-reported. Many people use traditional eye medicines, and this is also a major risk for corneal ulcers especially in developing countries. Prevention is most important as cure rates are discouraging.

**Objective:** To study the prevalence and risk factors of corneal ulcers among patients at a tertiary care hospital.

**Methods:** A Hospital based cross sectional study was carried out among a total of 42 cases at Department of Ophthalmology, Karnataka Institute of Medical Sciences, Hubli from November 2010 to May 2012. Institutional Ethics Committee permission was sought before the start of the study. Informed consent was taken from all patients. Data was entered in the pre designed pre tested questionnaire. Data analysis was done using proportions.

**Results:** Maximum cases were found in the age group of 41-50 years. The males were double than females. The male to female ratio was 2:1. Maximum incidence of corneal ulcer was observed among farmers followed by manual labourer and housewives. In the present study, left eye was found to be more commonly affected than right eye. Incidence of corneal ulcer was more among rural dwellers as compared to urban dwellers. The most common risk factor for corneal ulcer was trauma followed by chronic dacryocystitis. Pain and redness was present in all cases.

**Conclusion:** Trauma was found to be the most common and important risk factor of corneal ulcer. Certain occupations like farmers who are frequently exposed to trauma had higher incidence of corneal ulcer. Age groups who are more active and predisposed to trauma had also higher incidence of corneal ulcer.

**Key words:** Prevalence, risk factors, tertiary care hospital, cross sectional study

### INTRODUCTION:

Corneal ulcer is an inflammatory and infective condition of the cornea. It involves the disruption of epithelial layer of cornea. It is an important cause of monocular blindness only after cataract. This is more common in the developing countries. This disorder threatens the vision of the patient and can affect any age group and both the sexes. It is rampant worldwide. Statistics from United States state that about 9,30,000 patients of corneal ulcer are seen as outpatients and around 58,000 visit the department of emergency.<sup>1</sup>

Corneal ulcer constitutes a major cause of loss of vision all over the world. There are many factors which contribute to corneal ulcer. Hence the epidemiology is complicated. Many infectious agents are also involved as causative agents. They cause corneal scarring which lead to loss of vision. The prevalence is different for different countries. Trauma or injury to eye is the most common risk factor. And this factor is mostly under-reported. Many people use traditional eye medicines, and this is also a major risk for corneal ulcers

especially in developing countries. Prevention is most important as cure rates are discouraging.<sup>2</sup>

Various bacteria, fungi, amoebae and viruses are implicated in the causation of corneal ulcers that can lead to loss of vision. Eye injury, exposure to chemicals, and ultraviolet exposure are important non infectious causes. Use of contact lens is also considered as an important risk factor.<sup>3</sup>

The leading cause of corneal blindness is infectious keratitis. The prevalence and causes vary from country to country and region to region.<sup>4</sup>

In developing countries, many patients due to lack of awareness, ignorance present lately to the hospital. This is also an important risk factor for severity of corneal ulcer.<sup>5</sup>

Hence present study has been done to study the prevalence and risk factors of corneal risk factors at a tertiary care hospital.

## **MATERIALS AND METHODS**

Study design: Hospital based cross sectional study

Sample size: A total of 42 cases could be studied during the study period

Settings: Department of Ophthalmology, Karnataka Institute of Medical Sciences, Hubli

Study period: November 2010 to May 2012

Ethical considerations: Institutional Ethics Committee permission was sought before the start of the study. Informed consent was taken from all patients.

Selection method: Random

Inclusion criteria:

1. Patients with definitive signs and symptoms of corneal ulcer
2. Patients willing to participate in the study

Exclusion criteria:

1. Patients not willing to participate in the study
2. Seriously ill patients, bed ridden patients

Detailed history including age, sex, social class, history of trauma, side of involvement, occupation details like labourer, farmer, housewife, business, school going, industrial worker, clerical work or unemployed etc was noted. Also the residence in terms of rural or urban was asked. History of various risk factors like trauma, chronic dacryocystitis, use of contact lens, diabetes, use of topical steroids, known case of HIV was noted. If the trauma history was present, then the details were asked like exposure to organic matter, metallic foreign body, non-metallic foreign body, chemical injury, fingernail injury, dust particles etc was noted down. Various symptoms like pain, redness, watering, photophobia, discharge and diminished vision were inquired into. All this data was entered in the pre designed pre tested questionnaire. Data analysis was done using proportions.

## **RESULTS:**

Table 1: Distribution of study subjects as per their age

Age (years)	Number	Percentage
0-10	2	4.78
11-20	3	7.14
21-30	4	9.52
31-40	6	14.28
41-50	12	28.57
51-60	7	16.67
61-70	5	11.9
> 70	3	7.14

Maximum cases were found in the age group of 41-50 years followed by 51-60 years. Age group of 0-10 years presented only with 4.78 percent of cases

Table 2: Distribution as per gender of the study subjects

Gender	Number	Percentage
Male	28	66.67
Female	14	33.33

The males were double than females. The male to female ratio was 2:1

Table 3: Distribution of study subjects as per their occupation

Occupation	Number	Percentage
Manual labourer	7	16.67
Farmer	15	35.72
Housewives	6	14.28
Business	1	2.38
Student	3	7.14
Industrial worker	4	9.52
Unemployed	5	11.9

Maximum incidence of corneal ulcer was observed among farmers followed by manual labourer and housewives. All these occupations predispose to eye injury and this may lead to infection followed by corneal ulcer.

Table 4: Laterality incidence of corneal ulcer

Laterality	Number	Percentage
Left eye	26	61.91
Right eye	16	38.09

In the present study, left eye was found to be more commonly affected than right eye.

Table 5: Incidence of corneal ulcer as per the residence

Residence	Number	Percentage
Rural	27	64.28
Urban	15	35.72

Incidence of corneal ulcer was more among rural dwellers as compared to urban dwellers.

Table 6: Risk factors of corneal ulcer

Risk factors	Number	Percentage
Trauma	23	54.76
Chronic dacryocystitis	5	11.91
Contact lens wear	1	2.38
Diabetes mellitus	4	9.52
Topical steroids	2	4.76
HIV	2	4.76
Unknown factors	5	11.91

The most common risk factor for corneal ulcer was trauma followed by chronic dacryocystitis. Only one case reported due to use of contact lens. Diabetes was found in four cases. Use of topical steroids was found in two cases.

Table 7: Symptoms in corneal ulcer

Symptom	Number	Percentage
Pain	42	100
Redness	42	100
Watering	30	71.42
Photophobia	26	61.90
Discharge	17	40.47
Diminished vision	34	80.95

Pain and redness was present in all cases. The next most common symptom was watering followed by photophobia.

**DISCUSSION:**

The incidence was found to be high between 41-50 years of age and less common among 0-10 years of age. This may be due to fact that they are more involved with outdoor occupation. In Bharathi MJ study 92 patients above the age of 50 years were significantly higher than patients below the age of 50 years.

It was observed that males were affected more compared to females. The higher incidence in males is probably due to the fact that males are more involved in outdoor activities which predispose them to various types of injuries more frequently. In a study done by Bharathi MJ et al 92 males were more involved than females. In Schaefer F et al 49 study, males accounted for 50.58%; slightly more than females (49.42%). Majority of patients were involved in agriculture work (35.71%). This was followed by manual labourers (16.66%). More incidences among farmers may be due their increased exposure to various kinds of trauma like due to organic matter, dust particles, animal matter etc. In Bharathi MJ et al 92 study, the incidence was significantly higher among non-agriculture workers as compared to agricultural workers.

In the present study, left eye was more commonly affected than the right eye. No particular explanation can be given to the predominant left eye involvement. Similar results were obtained by Bharathi MJ et al 92. They found that left eye involvement was more common than right eye. In another study by Bourcier T et al 93 54.3% of cases had left eye involvement and 45.7% cases had right eye involvement.

In the present study, 71.42% of cases belonged to lower socioeconomic status and 28.58% of cases belonged to middle class. Substandard conditions of living, poor nutritional status, the type of occupation they are involved, lack of awareness about the ocular diseases may be the reason for this higher incidence of bacterial corneal ulcer belonging to lower socioeconomic status.

In the present study, 64.28% were from rural area and 35.72% belonged to urban area. Lack of education, lack of awareness about dangers of ocular injuries, blind beliefs, habit of instilling native medications like cows milk, rose water etc into the eye may be the reasons for the higher incidence of corneal ulcers in rural areas. In Bharathi MJ et al 92 study, 54.07% cases were from rural areas and 45.93% cases from urban areas. In both the studies, majority of cases were from rural areas.

In the present study, trauma being the major risk factor, history of trauma was present in 54.76% , non-traumatic factors were chronic dacryocystitis (11.91%) followed by diabetes (9.52%). In Srinivasan M et al 48 study, 65.4% cases of corneal ulcer occurred following trauma. In Bharathi MJ et al 92 study 28% cases were followed by trauma.

In the present study, trauma being the major risk factor, maximum number of cases was due to injury by organic

matter. 34.78% of cases were due to trauma secondary to organic matter, 13.05% secondary to metallic foreign body. In Bharathi MJ et al 92 study, trauma with organic matter accounted for only 2.49% whereas trauma with sand/soil accounted for 16.97% of total cases.

Pain and redness was present in all cases. The next most common symptom was watering followed by photophobia.

**CONCLUSION:**

Trauma was found to be the most common and important risk factor of corneal ulcer. Certain occupations like farmers who are frequently exposed to trauma had higher incidence of corneal ulcer. Age groups who are more active and predisposed to trauma had also higher incidence of corneal ulcer.

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**Source of Support: Nil. Conflict of Interest: None.**

Cite this article as: Kanakpur S, Spoorthy S. Prevalence and risk factors of corneal ulcers among patients in a tertiary care hospital. *MRIMS J Health Sciences* 2017;5(3):93-95.