International Journal of Medical Science and Clinical Invention 5(07): 3925-3927, 2018
DOI:10.18535/ijmsci/v5i7.07 **ICV 2016: 77.2**
e-ISSN:2348-991X, p-ISSN: 2454-9576

Research Article

A study on the prevalence of corneal blindness: A demographic correlates

Dr Gyan Chandra Dube

Assistant Professor Department of Ophthalmology, TS Mishra Medical College & Hospital Amousi Lucknow

Abstract:

Objective: To describe the prevalence corneal blindness and to correlate with demographic profile.

Methods: This was a retrospective cross-sectional study. Patients who came in OPD of the Department during the study period were included in the study. Their demographic profile was recorded. Corneal blindness was defined as presenting a VA of less than 3/60 due to corneal disease in the affected eye. The diagnosis was made by the experts available in the OPD. A total of 756 patients of either age and gender with 791 eyes were included in the study. The analysis was based on patients not on number of eyes.

Results: The prevalence of corneal blindness in at least one was found to be in 11 patients (1.5%, 95%CI=1.0-3%) in 15 eyes. The prevalence of corneal blindness was lower among males (1.3%) than females (1.7%). The highest prevalence of corneal blindness was noted among the patients of age >50 years (3.4%) and lowest was among the age group <10 years (06%). The prevalence of corneal blindness was higher among the patients of having primary education. The prevalence of corneal blindness was higher among patients belonging to urban area (2%) than rural (1%). The prevalence of corneal blindness was highest among farmers. There was no significant (p>0.05) association of the prevalence of corneal blindness with demographic factors

Conclusion: There is a significant burden of corneal blindness in the studied population.Preventive measures for corneal blindness are required for further strengthened.

Keywords: Corneal blindness, Prevalence, Demographic profile

Introduction

Blindness continues to be one of the major public health problems in developing countries. Cataract and corneal diseases are major causes of blindness in countries with less developed economies (1). According to the World Health Organization, corneal diseases are among the major causes of vision loss and blindness in the world today after cataract and glaucoma. In India, it is estimated that there are approximately 6.8 million people who have vision less than 6/60 in at least one eye due to corneal diseases; of these, about a million have bilateral involvement (2,3). It is expected that the number of individuals with unilateral corneal blindness in India will increase to 10.6 million by 2020 (2).

The cornea is a clear, transparent and avascular structure that covers the anterior one-sixth of the total circumference of the globe (4,5). The optical zone of the cornea is about 4 mm and located in the central one-third of the cornea. The cornea is a vital structure that forms the major refractive surface of the eye together with the pre-corneal tear film. Its refractive optical power is approximately 45.0 dioptres, which is about three-fourth of the total optical power of the human eye (5).

Corneal blindness encompasses a range of eye conditions that alter the transparency of the cornea, leading to corneal scarring and, eventually, blindness. Causes of corneal blindness include a wide variety of infections and inflammatory eye diseases, ranging from keratitis, xerophthalmia, eye trauma, trachoma, congenital disease and traditional eye medicine or home remedies, which often harm the eye rather than relieve pain or improve eyesight (6).

The causal factors responsible for corneal blindness vary with age. Significant causes of corneal blindness (based on indications of keratoplasty) in adults residing in countries with less-developed economies are corneal scars (28.1%) and active keratitis (12.2%) (1). In the pediatric age groups, the most common indication for keratoplasty in the developing world has been reported to be acquired non-traumatic scars (71.32%) (7,8).

The present study was conducted to find the prevalence of corneal blindness and its associated factors in north India.

Material and Methods

This was a retrospective cross-sectional study conducted in the Department of Ophthalmology, TS Mishra Medical College, Lucknow, UP, India. The study was approved by the Ethical Committee of the Institute.

The patient's record was assessed on pre-designed proforma. Patients who came in OPD of the Department during the study period were included in the study. Their demographic profile was recorded. Corneal blindness was defined as presenting a

VA of less than 3/60 due to corneal disease in the affected eye. The diagnosis was made by the experts available in the OPD. A total of 756 patients of either age and gender with 791 eyes were included in the study. The analysis was based on patients not on number of eyes.

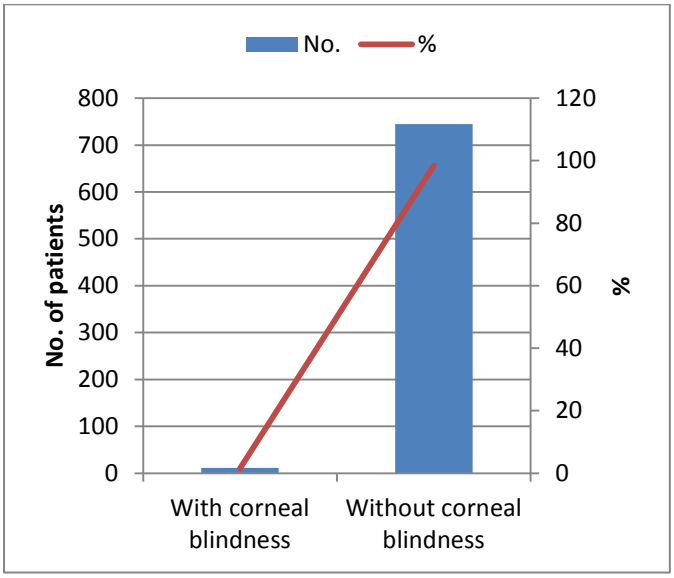
Analysis

The descriptive statistics are presented. The Chi-square test was used for comparisons. The 95% confidence interval (CI) of prevalence of corneal blindness was calculated. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

Results

The prevalence of corneal blindness in at least one was found to be in 11 patients (1.5%, 95%CI=1.0-3%) in 15 eyes (Fig.1).

Fig.1: Prevalence of corneal blindness



The prevalence of corneal blindness was lower among males (1.3%) than females (1.7%). The highest prevalence of corneal blindness was noted among the patients of age >50 years (3.4%) and lowest was among the age group <10 years (06%). The prevalence of corneal blindness was higher among the patients of having primary education. The prevalence of corneal blindness was higher among patients belonging to urban area (2%) than rural (1%). The prevalence of corneal blindness was highest among farmers. There was no significant (p>0.05) association of the prevalence of corneal blindness with demographic factors (Table-1).

Demographic profile	Total no. of patients		With corneal blindness		Without corneal blindness		P-value[1]
	No.	%	No.	%	No.	%	
Gender							
Male	456	60.3	6	1.3	450	98.7	0.69
Female	300	39.7	5	1.7	295	98.3	
Age in years							
<10	155	20.5	1	0.6	154	99.4	0.62
10-20	130	17.2	2	1.5	128	98.5	
21-30	156	20.6	2	1.3	154	98.7	
31-40	114	15.1	1	0.9	113	99.1	
41-50	114	15.1	2	1.8	112	98.2	
>50	87	11.5	3	3.4	84	96.6	
Education							
No formal education	258	34.1	4	1.6	254	98.4	0.89
Primary	130	17.2	3	2.3	127	97.7	
High school	168	22.2	2	1.2	166	98.8	
Secondary school	114	15.1	1	0.9	113	99.1	
College and higher	86	11.4	1	1.2	85	98.8	
Area							
Urban	352	46.6	7	2.0	345	98.0	0.25
Rural	404	53.4	4	1.0	400	99.0	
Occupation							
Farmer	110	14.6	3	2.7	107	97.3	0.50
Office worker	210	27.8	2	1.0	208	99.0	
Outdoor-worker	145	19.2	1	0.7	144	99.3	
Children and student	291	38.5	5	1.7	286	98.3	

Table 1: **Prevalence of corneal blindness by demographic profile**

Discussion

In this study, the prevalence of corneal blindness in at least one was found to be in 11 patients (1.5%, 95%CI=1.0-3%) in 15 eyes. A similar observation was reported by Li et al (9). A lower prevalence was noted by Wang et al (10) and Dandona et al (11). The lower prevalence in their studies could be attributed to the difference in methods (sample size and usage of LogMAR chart). Snellen chart was used in the present study. VA assessment has been found to be significantly better with LogMAR chart (12).

In the present study, corneal blindness was insignificantly (p>0.05) associated with increasing age. This finding is in agreement with reports from other studies (3, 13). A higher prevalence of corneal blindness was found among the participants older than 50 years in the present study. Wang et al (10) had also reported that the older age group was associated with an increased prevalence of corneal blindness. This may be due to that this age group engaged more in farming activities which predispose them to corneal injury. In the present study, the magnitude of childhood corneal blindness was low. This could be attributed to the wide and effective coverage of the National and routine immunization programmes for preventable diseases such as measles in the area. The public health education on the importance of measles and vitamin A immunization should be continued in

the local government.

The present study found the prevalence of corneal blindness being lower among the males. This finding is inconsistent with the studies reported by Li et al (9) in a rural Chinese population and in the Andhra Pradesh Eye Disease Study (3). This difference between the studies might be due to different socio-demographic profile the studied areas. In this study, the prevalence of corneal blindness among was found to be higher among low educational status. This finding is consistent with other studies (3, 13). In this study, the prevalence of corneal blindness was highest among farmers. This is in agreement with other studies (14, 15).

The findings of this study may serve as the basis for appropriate eye health care planning. Also, may serve for the prioritization of the available health resources towards reducing the incidence of corneal blindness.

Conclusion

There is a significant burden of corneal blindness in the studied population. Preventive measures for corneal blindness are required for further strengthened.

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