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Corneal Blindness- A clinical study

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Abstract

Aim: To screen for people with corneal blindness, to identify the etiology and to assess the risk factors for corneal blindness in and around Karaikal.

Materials and Methods: About 50 patients with corneal opacity and with the visual acuity less than 6/60 clinically aging between five years to eighty years were enrolled for this study. A detailed history regarding the etiology, nature of injury, pervious corneal disease or ocular surgery was recorded for each patient. A thorough ophthalmic examination was performed which includes external eye examination, slit lamp biomicroscopic examination for the size, site and depth of corneal opacity, presence of vascularization or ghost vessels and the anterior segment pathology. Visual acuity was recorded with illuminated Snellen's chart and intra ocular pressure measured with applanation tonometer.

Results: Mean age of this study group was forty two years; Twenty seven patients were male and remaining twenty three were female; Seventeen people had both eye involvement, nineteen only right eye and fourteen had only left eye involvement. Study population includes farmers, laborers, students, housewives, mason and others. Twenty one patients were found to have infective etiology; fourteen had injury, rest had postsurgical, nutritional and degenerative causes.

Conclusion: Infective keratitis is the leading cause of corneal blindness in our study, trauma being next important. Occupation is an important risk factor. Health awareness and safety measures can minimize the incidence of corneal blindness.

Keywords: Corneal opacity, Corneal blindness.

Introduction

The structural and functional integrity of cornea is of paramount importance for normal visual function. Its external location makes it vulnerable to a variety of insults that can lead on to sight threatening complications. Diseases affecting the cornea are a major cause of blindness in the world next to cataract. It is estimated that there are currently 45 million people worldwide who are bilaterally blind of which 6 to 8 million are blind due to corneal disease. In India, approximately 6.8 million people have corneal blindness with vision less than 6/60 at least in one eye and of those one million have bilateral corneal blindness.

Aims and Objectives

- To screen for people with corneal blindness
- To identify the etiology and
- To assess the risk factors for corneal blindness in and around Karaikal, the Union Territory of Puducherry.

Materials and Methods

About 50 patients of both sexes, age group ranging between 5to 80 years having corneal opacity with corrected visual acuity less than 6/60 attending the cornea clinic of our Institution for the past two years are recruited into the study. Patients with the peripheral corneal opacity, central opacity with visual acuity >6/60 in the affected eye, with active corneal ulcer were excluded from the study.

All the patients were explained about the study and consent was obtained. A detailed proforma was filled up for everyone after a detailed interview. History included the etiology and onset of corneal disease, the nature of injury if any, the object causing injury and previous surgeries causing impairment of vision.

A detailed ophthalmic examination was performed which includes slit lamp examination for the assessment of site, size and depth of corneal opacity, presence of vascularization or ghost vessels. Visual acuity was recorded with the Snellen's chart/ hand movements or light perception and intra ocular pressure with applanation tonometer.

Result and Analysis

Out of 50 patients, 27(54%) were male and 23 (46%) were female(Table 2). Mean age of the population was 42.2 years(Table 1). Among 50 patients, 19(38%) had opacity in the Right eye, 14 (28%) had in the Left eye and 17(34%) had opacity in both eyes(Table 3). Within the total population, 18 patients (36%) were farmers and laborers, 14 patients (28%) were students, 5 (10%) were housewives, 3 (6%) were mason and the rest 10 patients (20%) were cook, carpenter, sweeper, plumber, clerk etc.(Table 4)

Table 1: Age distribution

Age of Patients(Yrs)	No. of patients	Percentage
0-20	14	28
21-40	06	12
41-60	19	38
61-80	10	20
>80	01	02
Total	50	100

Table 2: Sex distribution

Sex	No. of patients	Percentage
Male	27	54
Female	23	46
Total	50	100

Table 3: Laterality

Laterality	No. of patients	Percentage
Right Eye	19	38
Left Eye	14	28
Both	17	34
Total	50	100

Table 4: Occupation and corneal opacity

Occupation	No. of patients	Percentage
Student	14	28
Farmer	08	16
Laborer	10	20
Mason	03	06
House wife	05	10
Others	10	20
Total	50	100

Others: 1 cook, 1 carpenter, 1 painter, 1 sweeper, 1 plumber, 2 clerk, 1 manager, 1 driver, 1 lab technician.

Corneal infection was identified to be the major etiology in our study affecting 24 patients (48%) out of total 50. Trauma being the second major cause involving 14 patients (28%) out of which 11 were penetrating injury and 3 were chemical injury. Buphthalmos contribute to 10% of the study, postsurgical bullous keratopathy 6%, nutritional xerophthalmia 4%, degeneration and dystrophy each contributes 2% (Table 6). Xerophthalmia and Buphthalmos were the eiology identified in children and Herpes zoster was identified as the cause for corneal blindness in elderly people.

Table 5: Occupation and etiology of corneal opacity

Occupation	Infective keratitis	Penetrating injury	Others	Total
Farmer	04	03	01	08
Laborer	06	01	03	10
Student	03	04	07	14
Mason	03	00	00	03
Others	05	03	07	15
Total	21	11	18	50

Table 6: Etiologies of corneal opacity

S. No.	Etiology	No. of patients	Percentage
1	Infective Keratitis	21	42
2	Penetrating Injury	11	22
3	Buphthalmos	05	10
4	Chemical Injury	03	06
5	Herpes Zoster	02	04
6	Nutritional	02	04
7	Exposure Keratitis	01	02
8	Bullous Keratopathy	01	02
9	Degeneration	01	02
10	Dystrophy	01	02
11	Failed Keratoplasty	02	04
Total		50	100

Discussion

Majority of our study population was in middle age and among the affected population, farmers and laborers top the list. Corneal infection was the leading cause of opacity in our study affecting nearly 50% of the people. Injury comes next contributing to 28%. Childhood corneal blindness was due to buphthalmos and nutritional causes. Corneal opacity is unilateral in 66% and bilateral in 34% of our patients.

Prabhasawat et al. in 2007 analyzed the cause of corneal blindness in four hospitals of Thailand and found that leading causes were corneal infection (35.6%), bullous keratopathy (27.8%) and trauma (14%).[1]

Dandana et al in 2003 examined 11786 people of all ages with corneal blindness in Andhra Pradesh and identified 0.10% prevalence of corneal blindness in both eyes and 0.56% in one eye and the most frequent cause was infective keratitis (36.7%), trauma (28.6%).[2]

Tandon et al of New Delhi reported 62.6% corneal infection, 5.7% chemical injury, 7.1% corneal dystrophy, 5.4% keratomaacia, 6.9% bullous keratopathy, 3.6% corneal degeneration as the cause for corneal blondness in India.[3]

Mathew S. OLiva et al quote that keratitis(21%) and trauma(26%) were the leading cause of ocular morbidity in South India; also found that 71.4% occur before 15 years and in urban areas.[4]

Bulletin of WHO in 2001 states that 1.5 to 2 million new cases of uniocular blindness are reported every year due to trauma and corneal ulceration and about 3.5 million cases are blind due to xerophthalmia annually.[5]

Noopur Gupta et al in 2014 worked on the prevalence of corneal disease in rural population of North India and showed that common causes of corneal opacity were pterygium(34.5%), ocular trauma (22.3%), infectious keratitis(14.9%) and corneal degeneration (23.1%).[6]

A. O. Ashaye et al of Nigeria quotes in his study that main causes of corneal opacity were trauma(51.1%) and microbial keratitis(26.7%).[7]

Conclusion

There is a significant burden of corneal blindness in this population, majority of which is avoidable. Control of preventable causes requires extensive public support and community participation. Eye health promotion strategies are required to raise awareness about the cause and prevention of corneal blindness.

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