

Etiology of Corneal Blindness: A Clinical Study

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Abstract:

Aim: To study etiology of corneal blindness and the distribution of corneal blindness according to age, sex, laterality and locality.

Material & Methods: A hospital-based, retrospective study was conducted over a period of 6 months. 75 patients with healed corneal lesions fulfilling the inclusion and exclusion criteria were included in the study. Cases were also sub-grouped on the basis of sex, laterality of the involved eye and locality of residence.

Results: Out of 75 consecutive patients having corneal blindness, 45 were male (60 %) and 30 were female (40 %); 56 patients resided in rural area (74.67 %) and 19 were from urban area (25.33 %); involvement was unilateral in 69 patients (92 %) and bilateral in 6 patients (8 %). Cause of corneal blindness was found to be as following - Post infection - 41.33 %, Trauma - 13.33 %, Chemical injury - 13.33 %, Xerophthalmia - 4 %, Corneal Dystrophy - 6.67 %, Corneal Degeneration - 9.33 %, Bullous Keratopathy - 8 % and Congenital - 4 %.

Conclusion: The distribution of corneal blindness varies in different aspects like age, sex, occupation and locality.

Keywords: Bullous Keratopathy, xerophthalmia, blindness, dystrophy

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I. Introduction

Blindness remains a major public health, social and economic problem especially in the developing world, where more than three-quarters of the blind people live.¹ Blindness has a considerable negative economic implications^{2,3} for an individual and the community. The prevalence and causes of blindness vary from one region to another^{4,5} and is highest in developing countries.⁵ Regional variation underscores the need for decentralization of strategic planning of eye care services in order to achieve the goal of VISION 2020: The Right to Sight.⁴ Worldwide,⁶ cataract still remains the major cause of blindness accounting for 47.8% of blindness and glaucoma recording 12.3%. Age related macular degeneration, now emerging as a major cause of blindness especially in the developed countries accounted for 8.7%. Corneal disease is one of the major causes of blindness worldwide. Infectious keratitis, ocular trauma, and corneal opacities cause an estimated 1.5–2.0 million new cases of unilateral blindness every year.^{7,8} The prevalence of corneal blindness remains highest in developing countries.⁹ Worldwide, major investments in public health infrastructure and primary eye care services have built a strong foundation for treating and preventing future corneal blindness. According to the National Programme for Control of Blindness (NPCB) estimates, there are currently 120,000 corneal blind persons in the country and it is estimated that addition of 25,000-30,000 corneal blindness cases every year in the country.¹⁰

II. Material & Methods

A hospital-based, retrospective, observational study conducted over 6 month period at a tertiary hospital in Punjab, India. Written informed consent was taken from all the study patients. 75 patients with healed corneal lesions fulfilling the inclusion and exclusion criteria were included in the study. Cases were also sub-grouped on the basis of sex, laterality of the involved eye and locality. A detailed history and ocular examination of each patient were recorded. Patients with diminution of vision due to corneal cause, with age 5 years or above and best corrected visual acuity $\leq 3/60$ (Snellen's chart) were included in the study. Patients with loss of vision due to other ocular diseases associated with corneal cause, best corrected visual acuity $>3/60$ (Snellen's chart) and with age less than 5 years were excluded from the study.

III. Results

The present study was based on 75 cases of corneal blindness attending OPD at the department of Ophthalmology at Government Medical College, Patiala, Punjab during a period of 6 months.

Out of 75 consecutive patients having corneal blindness, 45 were male (60 %) and 30 were female (40 %) **Table 1** ; 56 patients resided in rural area (74.67 %) and 19 were from urban areas (25.33 %) **Table 2** ; involvement was unilateral in 69 patients (92 %) and bilateral in 6 patients (8 %) **Table 3**. **Table 4** depicts distribution of corneal blindness according to age.

Table 1: Distribution of corneal blindness according to sex

Gender	No. of patients	Percentage
Male	45	60 %
Female	30	40 %

Table 2 : Distribution of corneal blindness according to locality

Locality	No. of patients	Percentage
Rural	56	74.67 %
Urban	19	25.33%

Table 3: Distribution of corneal blindness according to laterality

Laterality	No. of patients	Percentage
Right eye	30	40 %
Left eye	39	52 %
Both eyes	6	8 %

Table 4: Distribution of corneal blindness according to age

Age (years)	No. of patients	Percentage
< 10	5	6.67 %
10-19	8	10.6 %
20-35	15	20 %
36-45	7	9.33%
46-60	24	32 %
61-70	16	21.33 %

Cause of corneal blindness was found to be as following (**Figure 1**) - Post infection -41.33 %(Figure 2,3,4), Trauma – 13.33 %, Chemical injury – 13.33 %, Xerophthalmia – 4 %, Corneal Dystrophy – 6.67 %, Corneal Degeneration – 9.33 % , Bullous Keratopathy – 8 % and Congenital – 4 %.

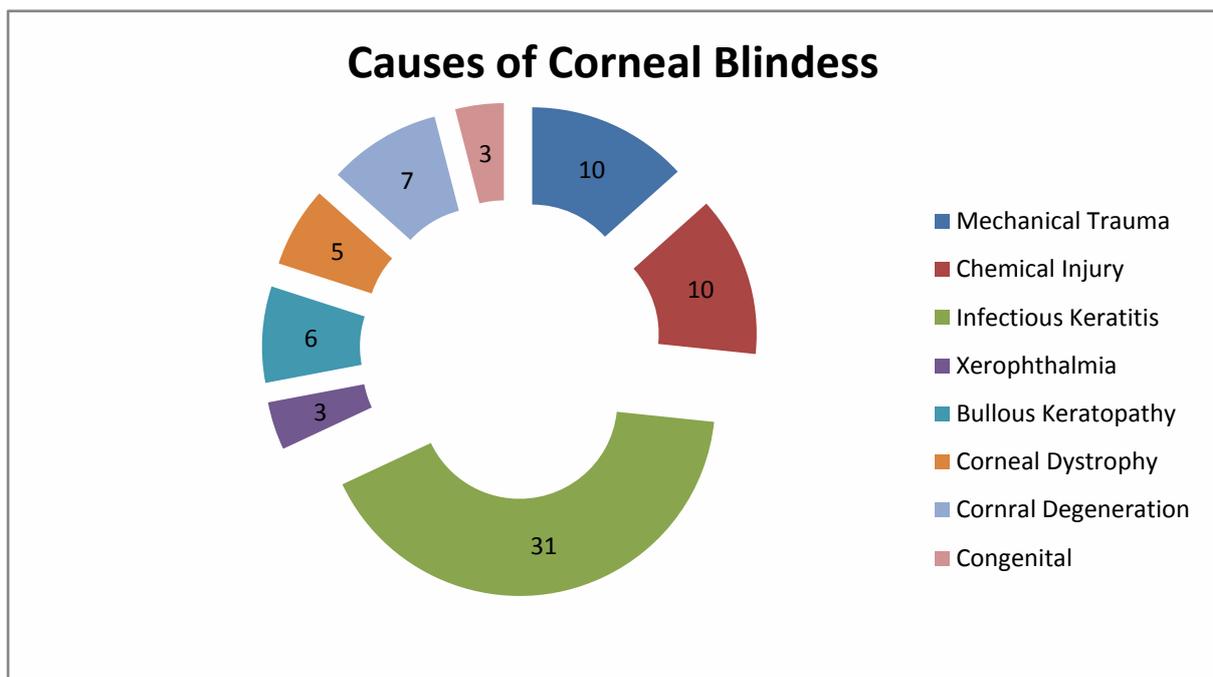


Figure 1: Distribution of corneal blindness according to cause



Figure 2



Figure 3



Figure 4

IV. Discussion

Corneal opacification is the 3rd commonest cause of childhood blindness worldwide, after non-corneal causes such as congenital cataract and glaucoma.¹¹ Unlike trachomatous corneal opacification, which results from repeated episodes of trachoma infection, corneal blindness in childhood is often due to a single episode of infection, such as ophthalmia neonatarum resulting from *Neisseria gonorrhoea* and *Chlamydia trachomatis* infections acquired from the mother's genital tract at birth. During infancy and childhood, measles is another important cause of corneal blindness in the developing world, the impact of which is mediated through multiple mechanisms, including induction of acute vitamin A deficiency, measles keratitis, secondary bacterial or herpetic keratitis as well as the use of harmful traditional medicines.¹¹ In our study, infectious keratitis is most prevalent cause of corneal blindness accounting in 31 patients (41.33 %). Patients with corneal blindness suffer from long term loss of vision, reduced quality of life, decreased productivity and distress.¹² In children and the elderly, the impact is even greater¹³ because in the elderly the disease is more severe and in children, it is the life-long burden of disease.

V. Conclusion

The distribution of corneal blindness varies with different aspects like age, sex, occupation and locality. So public health measures, such as education, workplace reforms, provision of health resources and research should be diverted towards treating and reducing corneal blindness.

References

- [1]. VISION 2020: The Right to Sight. Report on World Sight 2002. Executive document. Vol. 1. p. 1- 22. Available at www.who.int/ncd/vision2020.
- [2]. Faal H. National Postgraduate Medical College of Nigeria 8th Faculty of Ophthalmology Lecture. Ibadan: The Economics of Sight and Vision Loss; 2005. p. 1- 28.
- [3]. Frick KD, Foster A. The magnitude and cost of global blindness: An increasing problem that can be alleviated. *Am J Ophthalmol* 2003;135:471- 6.
- [4]. Abdull MM, Sivasubramaniam S, Murthy GV, Gilbert C, Abubakar T, Ezelum C, et al. Causes of blindness and visual impairment in Nigeria: The Nigeria national blindness and visual impairment survey. *Invest Ophthalmol Vis Sci* 2009;50:4114- 20.
- [5]. Kyari F, Murthy VS, Gudvalletti G, Salvary S, Clare EG, Abdull M, et al. Prevalence of blindness and visual impairment in Nigeria: The National Blindness and visual impairment survey. *Invest Ophthalmol Vis Sci* 2009;50:2034- 9.
- [6]. World Health organization. Magnitude and causes of visual impairment. Fact Sheet. Revised 2008. No.282.
- [7]. Pascolini D, Mariotti SP. Global estimates of visual impairment: 2010. *Br J Ophthalmol*. 2012;96(5):614–618.
- [8]. World Health Organization. Prevention of Blindness and Visual Impairment. Priority Eye Diseases – Corneal Opacities.
- [9]. Whitcher JP, Srinivasan M, Upadhyay MP. Corneal blindness: a global perspective. *Bull World Health Organ*. 2001;79(3):214–221.
- [10]. National Programme for Control of Blindness. Available from: <http://pbhealth.gov.in/pdf/Blindness.pdf>.
- [11]. Solomon A. State of the World's Sight. Vision 2020: the Right to Sight 1999–2005. Geneva: World Health Organization, WHO Press, 2005.
- [12]. Keay L, Edwards K, Naduvilath T et al. Microbial keratitis predisposing factors and morbidity. *Ophthalmology* 2006; 113: 109–16.
- [13]. Parmar P, Salman A, Kalavathy CM, Kalamurthy J, Thomas PA, Jesudasan CA. Microbial keratitis at extremes of age. *Cornea* 2006; 25: 153–8.

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