



## CORNEAL BLINDNESS – A CLINICAL STUDY

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**ABSTRACT** This is a hospital based observational study done over a period of 6 months to evaluate causes of corneal blindness in patients attending the cornea speciality clinic of Government regional eye hospital, Visakhapatnam. Patients with visual acuity less than or equal to counting fingers at 3 meters and better than no perception of light were included. Patients underwent detailed slit lamp biomicroscopic evaluation and posterior segment examination either with indirect ophthalmoscope or b scan. Corneal staining, culture and sensitivity were performed when needed. Out of 200 cases studied, most common cause of corneal blindness was infective keratitis followed by trauma and chemical injuries. Since most of the patients had curable or preventable cause of corneal blindness, an early approach, thorough evaluation, proper management with timely referral and eye health awareness helps reduce burden of corneal blindness.

**KEYWORDS** : corneal blindness, infective keratitis, corneal laceration, corneal trauma, eye donation, eye health awareness.

- Corneal visual impairment encompasses a wide variety of infectious and inflammatory eye diseases that cause scarring of the cornea. This significant scarring ultimately leads to functional vision loss.<sup>(1)</sup> Being **4th cause of blindness globally (5.1%)** - major cause of visual deficiency after cataract, glaucoma and age-related macular degeneration (AMD).<sup>(2)</sup> Epidemiology of corneal blindness is dependent on the ocular diseases that are endemic in each geographical area.<sup>(3)</sup> With the focus of blindness prevention programmes shifting onto overcoming the lag in **cataract surgeries**, in many developing countries, **other major causes of blindness** and their proper management has suffered especially at the rural level of health system. With recent success of public health programmes, epidemiology of corneal blindness has shifted from causes like trachoma, xerophthalmia to ocular trauma, corneal ulceration and traditional eye medicine. India has the **world's largest corneal blind population**<sup>(4)</sup>, with a prevalence of 0.45%.<sup>(5)</sup>

**METHOD**

It is a hospital based observational study done in the department of ophthalmology, Government regional eye hospital, from February 2019 to August 2019 with a sample size of 200 patients.

**INCLUSION CRITERIA:**

- Patients attending the cornea clinic with a vision **less than or equal to 3/60 and better than no perception of light.**
- Patients more than 5 years of age.

**EXCLUSION CRITERIA:**

- Patients **not giving consent** for inclusion in the study.
- Loss of vision due to **other ocular diseases** associated with corneal cause.

All patients included in the study underwent a detailed **slit lamp biomicroscopic evaluation** of the anterior segment. Best corrected visual acuity was tested with **Snellen chart**. A dilated **fundus examination** was performed with an indirect ophthalmoscope and in cases where that was not possible, posterior segment evaluation was done with B-scan ultrasonography. Appropriate **corneal staining** procedures were performed when required. Corneal scraping and microscopy was performed for cases with suspicion of infective origin.

**RESULTS**

- Total no. of patients examined were 200

**AGE AND SEX DISTRIBUTION :**

114 male patients (57%) and 86 female patients (43%). All the patients were divided into nine groups based on their age as shown in the graph.(Figure-1)

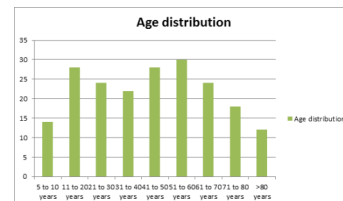


Figure-1 : Graph showing the age distribution.

**LATERALITY:**

About 86% of cases had unilateral disease while 14% had bilateral disease.

**RURAL – URBAN POPULATION DISTRIBUTION:**

Rural population – 80  
Urban population – 120

Though patients from rural population were lesser in number, they came with more severe form of disease.

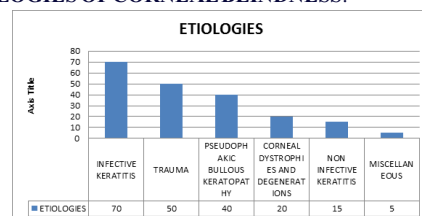
**AETIOLOGIES OF CORNEAL BLINDNESS:**

Figure-2 : Graph showing the aetiologies of corneal blindness in order of their frequency.

**AGE WISE DISTRIBUTION OF AETIOLOGIES:**

- Infective keratitis - 40 to 70 years
- Trauma and chemical injuries - 20 to 40 years
- Degenerations and dystrophies - 50 – 70 years
- In age < 10 years aetiologies were nutritional deficiency and trauma.

**DISCUSSION**

- In this study on aetiologies of corneal blindness, the most common aetiology turned out to be **infective keratitis (40%)** followed by **trauma (25%)**.
- The most common age group being involved was between **51 to 60 years** with more male preponderance.
- Most of the cases were from urban population however the ones rural population presented with more severe form of disease.

**Observations Made While Treating Various Cases :**

- **Infective keratitis.**

Most common risk factor associated was a prior injury.

About 70% of cases of infective keratitis were farmers ( rural population).

About 30% of cases had instilled traditional eye medicines (honey) or used over the counter medications that included steroids.

- Most rural patients come late in course of disease with advanced corneal damage.

- **Trauma.**

- **Corneal Lacerations :**

60% were following road traffic accidents in adults .

Alcohol influence in 45% of the accidents.

In children most common cause was a sport / play related injury.

Observation: Earlier the approach better is prognosis

- **CHEMICAL INJURY:**

Lime and cement – most common. Hence most prone profession was that of masons.

Commonly encountered as a workplace hazard.

- **OBSERVATION:**

Proper first aid treatment and early referral improves the visual prognosis.

Most were workplace injuries – importance of workplace safety and safety measures explained.

Patients were advised to use a protective eyewear when at work.

## CONCLUSION

- Both infectious and traumatic causes of corneal blindness more common in rural population.
- Late approach of such cases results in permanently scarred corneas.
- Rural health system and eye health awareness to be improved among the rural patients.
- Awareness about the hazards of traditional eye medicines.
- Pseudophakic bullous keratopathy can be prevented with better training of eye surgeons and laying strict standards for manufacturing of IOL, viscoelastics and irrigating fluids.
- Need for awareness of complications due to indiscriminate use of topical corticosteroids needed in general population as well as general practitioners.
- Workplace hazards – major cause in urban population.
- Compulsory protective glasses and good first aid facility in all high risk industries.
- Individual approach in form of patient education on the importance of protective eyewear is needed.
- Need for school health programmes to reduce childhood morbidities.
- Many rural kids came with corneal lacerations while playing with bow and arrows/gilli danda. Hence both parents and kids are to be taught the importance of safe play environment.
- Casualty departments of all hospitals should be equipped to provide proper first aid to ocular injuries.
- Need for improvement of infrastructure in government setups, both peripheral and tertiary for better and comprehensive management of cases.
- Need for improved cornea services and microbiology lab for the tertiary care centres within the premises.
- Need for increase in awareness of importance of eye donation.

## TAKE HOME MESSAGE :

- Hence a thorough evaluation, early diagnosis and proper management with timely referral to higher centre and proper eye health education can help bring down the burden of corneal blindness especially in the rural areas.

## REFERENCES

1. The prevention of blindness: report of a WHO Study Group. Geneva, World Health Organization, 1973: 10–11 (WHO Technical Report Series, No. 518).
2. Global initiative for the elimination of avoidable blindness. Geneva, World Health Organization, 1997 (unpublished document WHO/PBL/97.61/Rev 1)
3. Lim AS. Mass blindness has shifted from infection (onchocerciasis, trachoma, corneal ulcers) to cataract. *Ophthalmologica*, 1997, 211:270.

4. Oliva MS, Schottman T, Gulati M. Turning the tide of corneal blindness. *Indian J Ophthalmology* 2012;60:423-7

5. Gupta N, Tandon R, Gupta S, Sreenivas V, Vashist P. Burden of corneal blindness in India. *Indian J Ophthalmol* 2013;38:198-206