

Evaluation of Corneal Foreign Bodies in Known Population at a Tertiary Care Hospital

Jain Anant Vir¹, Ranjan Somesh^{2*}

¹Associate Professor, ²Assistant Professor, Department of Ophthalmology, Rama Medical College Hospital and Research Centre, Hapur, Uttar Pradesh, India.

ABSTRACT

Background: A superficial corneal foreign body (CFB) is the most common and preventable eye injury. CFBs are small particles that impinge upon cornea. The present study was conducted to evaluate corneal foreign bodies in known population.

Materials and Methods: A hospital based prospective observational study was conducted among 150 cases of CFBs. Demographic information from each patient was recorded. Each patient underwent careful, comprehensive examination after putting topical anaesthesia. Slit lamp bio microscopic examination was done. Corneal foreign bodies were removed using a 26-gauge needle or tubercular syringe under topical anaesthesia. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

Results: In the present study total 150 patients were included in the study. The affected patients mostly belong to age group of 31 to 40years (44.66%) and 41 to 50 years (26%). There were 80% males and 20% females affected by CFB injury. CFBs were common in right eye (58.66%) compared to left eye (41.33%). The most common CFB material was metallic iron

INTRODUCTION

Corneal foreign bodies (CFBs) are one of most common ophthalmological emergency cases.¹⁻³ This type of injury often occurs at work, domestic and leisure activity (home, garden, playing), sports or windy day.4,5 Ocular trauma is the leading cause of unilateral loss of vision⁶ and is a considerable cause of visual impairment and utilization of ophthalmic service resources.7 Ocular Surface Foreign Bodies (OSFB) or Superficial foreign bodies are basically small particles that impinge upon the conjunctiva or cornea.8 According to the Classification of Ocular Trauma based on severity of the trauma, the injuries caused by superficial foreign bodies (FBs) are graded as mild.⁹ Yet they tend to be very uncomfortable causing red, watery, gritty eye with pain that increases every time the eye opens or closes.¹⁰ These FBs may range from occasional eye lashes, to dust, sand, paint or metal particles, etc and the severity of the symptoms depend on what the foreign body is and how the injury occurred.5

particles (54.66%) followed by dust particles (16.66%). The majority of corneal foreign body ware paracentral (60.66%).

Conclusion: The present study concluded that the most common CFB material was metallic iron particles followed by dust particles and the majority of corneal foreign body ware paracentral.

Keywords: Corneal Foreign Body Injury, Metallic Iron Particles, Paracentral.

*Correspondence to:

Correspondence to:		
Dr. Somesh Ranjan,		
Assistant Professor,		
Department of Ophthalmology,		
Rama Medical College Hospital and Research Centre,		
Hapur, Uttar Pradesh, India.		
Article History:		
Received: 13-02-2021, Revised: 06-03-2021, Accepted: 21-03-2021		
Access this article online		

Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2021.7.2.025	

The foreign body if ignored may lead to ocular complications like conjunctivitis, keratitis, corneal ulceration and even ocular penetration.¹¹ Some iron FBs lead to formation of rust ring.¹² These foreign bodies are usually not serious, and they do not cause threat to sight. However recurrent episodes can lead to scarring which causes impairment of vision.¹⁰ The present study was conducted to evaluate corneal foreign bodies in known population.

MATERIALS AND METHODS

A hospital based prospective observational study was conducted among 150 cases of CFBs. Patients of age between 20 years to 60 years, patients diagnosed or had a suspected diagnosis of cornea FB, patients who were able to complete the anterior segment examinations with clear anterior segment colour photography., patients had lesions with a depth that did not exceed 2/3 of the corneal thickness were included in the study. Patients who had full thickness penetrating corneal injury with CFB, Injury with signs of corneal infection were excluded from the study. Demographic information from each patient was recorded. Each patient underwent careful, comprehensive examination after putting topical anaesthesia. Slit lamp bio microscopic examination was done following which anterior segment photography was taken focusing mostly on cornea and the depth of CFBs. The CFB was marked as central, paracentral and peripheral taking into account 3 mm radius as central, 3 to 6 mm radius as paracentral and beyond that as peripheral. Fluorescin stain was used if required to delineate foreign body and residual abrasion. Corneal foreign bodies were removed using a 26-gauge needle or tubercular syringe under topical anaesthesia. Topical antibiotic along with tear substitute were prescribed for treatment. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

RESULTS

In the present study total 150 patients were included in the study. The affected patients mostly belong to age group of 31 to 40years (44.66%) and 41 to 50 years (26%). There were 80% males and 20% females affected by CFB injury. CFBs were common in right eye (58.66%) compared to left eye (41.33%). The most common CFB material was metallic iron particles (54.66%) followed by dust particles (16.66%). The majority of corneal foreign body ware paracentral (60.66%).

Table 1: Demographic data			
Variable	N(%)		
Gender			
Male	120(80%)		
Female	30(20%)		
Age group(yrs)			
20-30	34(22.66%)		
31-40	67(44.66%)		
41-50	39(26%)		
51-60	10(6.66%)		
Side			
Right	88(58.66%)		
Left	62(41.33%)		

Table 2: Various types of CFBs found in the eye

CFB material	N(%)
Metallic	82(54.66%)
Dust	25(16.66%)
Wood/Thorn	11(7.33%)
Glass	16(10.66%)
Insect	8(5.33%)
Others	8(5.33%)
Total	150(100%)

Table 3: Location of CFB on cornea

Location	N(%)
Central	32(21.33%)
Paracentral	91(60.66%)
Peripheral	27(18%)

DISCUSSION

The most common ocular injuries are the ones caused by OSFB or superficial FBs and they usually do not lead to visual impairment.¹³

In the present study total 150 patients were included in the study. The affected patients mostly belong to age group of 31 to 40years (44.66%) and 41 to 50 years (26%). There were 80% males and 20% females affected by CFB injury. CFBs were common in right eye (58.66%) compared to left eye (41.33%). The most common CFB material was metallic iron particles (54.66%) followed by dust particles (16.66%). The majority of corneal foreign body ware paracentral (60.66%).

Multiple reports from the literature indicate a higher incidence of ocular trauma in males. The male to female ratio ranged in other studies from 3:1 as per Jahangir Tehmina et al.¹⁴ to 14:1 in study of Guerra García RA et al.¹⁵ The male predominance might be due to the greater exposure of men to risks such as heavy work, contact sports, altercations, traffic accidents and alcohol intake.¹⁵

Reports of Guerra Garcia RA et al indicate mean ages ranging from 30 to 35 years.¹⁵

Corneal injuries most commonly occur due to metallic foreign bodie.¹⁶ This sort of injury is commonly seen in occupations associated with engineering and industry.^{4,17}

Metallic FBs usually leaves a rust ring in the cornea often causes a white scar to form that can decrease visual quality. The appearance of a rust ring indicates an FB was embedded in the cornea for >12-24 h.¹⁸

A study showed right eye was more involved compared to left eye. This may be due to blinking reflex is more in the left eye which may prevent foreign body entering the eye.¹⁹

A study by Reddy P showed that majority of CFBs were found in paracentral area followed by central and peripheral area of cornea. 20

CONCLUSION

The present study concluded that the most common CFB material was metallic iron particles followed by dust particles and the majority of corneal foreign body ware paracentral.

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Source of Support: Nil.

Conflict of Interest: None Declared.

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Cite this article as: Jain Anant Vir, Ranjan Somesh. Evaluation of Corneal Foreign Bodies in Known Population at a Tertiary Care Hospital. Int J Med Res Prof. 2021 Mar; 7(2): 98-100. DOI:10.21276/ijmrp.2021.7.2.025