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ORIGINAL RESEARCH

A study on the Clinical Profile of Patients presenting with corneal foreign bodies in the Department of Ophthalmology, Jorhat Medical College and Hospital, Jorhat

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ABSTRACT

Objective: To study the clinical profile of patients presenting with corneal foreign bodies in Emergency and Out-patient Department of Jorhat Medical College and Hospital, Jorhat. **Materials and methods:** A Hospital based cross sectional study conducted was on 50 patients presenting with corneal foreign bodies, during a period of 6 months. This study was conducted based on the age, gender, occupational distribution, types of corneal foreign body and location of the corneal foreign body.**Results**: Of the total 50 patients, 47(94%) were males, 22(44%) were of age group 21- 40 years, 25(50%) patients were workers in metal industry, 20(40%) were patients with metallic iron particles and 30(60%) of the corneal foreign bodies were paracentral in location. **Conclusion:** Corneal foreign bodies were seen mostly in age group between 21- 40 years, male gender being affected the most involving paracentral area in cornea and metallic iron particle was the most common foreign body. Proper use of protective wear (with side protection) in workplace, education and early intervention and treatment will reduce the incidence and complications related to corneal foreign body.

Key words: Metal industry, Protective wear, Education, Early intervention.

INTRODUCTION

A corneal foreign body (FB) is any object that becomes superficially adhered to or embedded within the cornea. As the cornea is the eye's outermost layer, it is highly exposed to foreign particles. These objects can cause varying degrees of visual impairment, ranging from mild blurriness to severe, vision-threatening corneal ulcers [1][2]. If left untreated, a corneal foreign body can lead to significant pain, discomfort, and potential vision loss [3].

Majority of the corneal foreign bodies are metallic and commonly result from industrial accidents, particularly in metalworking and construction settings [4][5]. Affected individuals often experience symptoms such as a foreign body sensation, pain, redness, excessive tearing, and blurred vision, often with a history of trauma related to the incident [6]. If scarring occurs along the visual axis, visual acuity may be reduced, and secondary infectionsranging from keratitis to endophthalmitiscan develop. Metallic foreign bodies frequently leave rust deposits in the cornea, leading to scarring [7][8]. The presence of a rust ring generally indicates that the foreign body has been embedded for over 24 hours [9].

MATERIALS AND METHODOLOGY

Aims and objectives

To determine the pattern of occupational, age and gender distribution and also the types and location of corneal foreign bodies.

Methodology

50 consecutive patients were selected who presented to the Emergency and Outpatient Department of Ophthalmology, Jorhat Medical College and Hospital, for 6 months.

Place of study: Jorhat Medical College and Hospital, Assam

Type of study: Hospital-based cross-sectional study

Duration of study: 6 months

Selection of cases: All consecutive patients fulfilling inclusion and exclusion criteria attending Emergency and Outpatient Department of Ophthalmology, Jorhat, during the study period June to November 2024.

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Inclusion criteria

1. Age between 1 to 80 years
2. All genders
3. Patients willing to give consent to participate in the study

Exclusion criteria

1. Patients below 1 year of age

Consent- A written and informed consent was taken from the patients

Records were made regarding the patient's activities at the time of the incident. Visual acuity was measured using the Snellen's chart. Slit lamp bio-microscopy with fluorescein staining (Fluorescein strip) was performed for all cases. Topical anaesthesia (proparacaine 0.5% eye drops) was applied to the affected eye, and the corneal foreign body was removed using a 26-gauge needle. If a rust ring was present, it was also removed. The type and location of the foreign body were documented. Following the removal, an eye patch was applied, along with moxifloxacin eye ointment and panthegel eye ointment to the affected eye, and the patient was instructed to return for a follow-up the next day.

RESULTS

1. Gender distribution: Among the patients, 94%(n=47) were males and 6%(n=3) were females.

Table 1: Gender distribution

Gender	Number of patients	Percentage
Male	47	94
Female	3	6

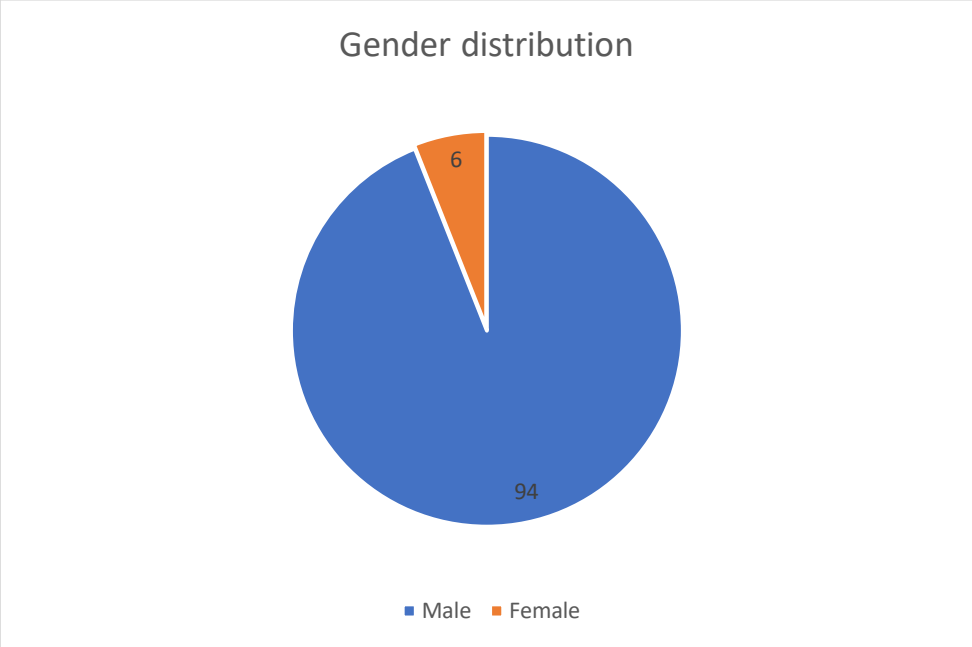

Figure 1: Gender distribution

2. Age distribution: The affected patients mostly belong to age group of 21-40 years i.e. 44% (n=22), followed by age group of 41-60 years of agei.e.24% (n=12).

Table 2- Age distribution.

Age in years	Number of patients (n)	Percentage (%)
1-20	**7**	**14**
21-40	**22**	**44**
41-60	**12**	**24**
61-80	**9**	**18**

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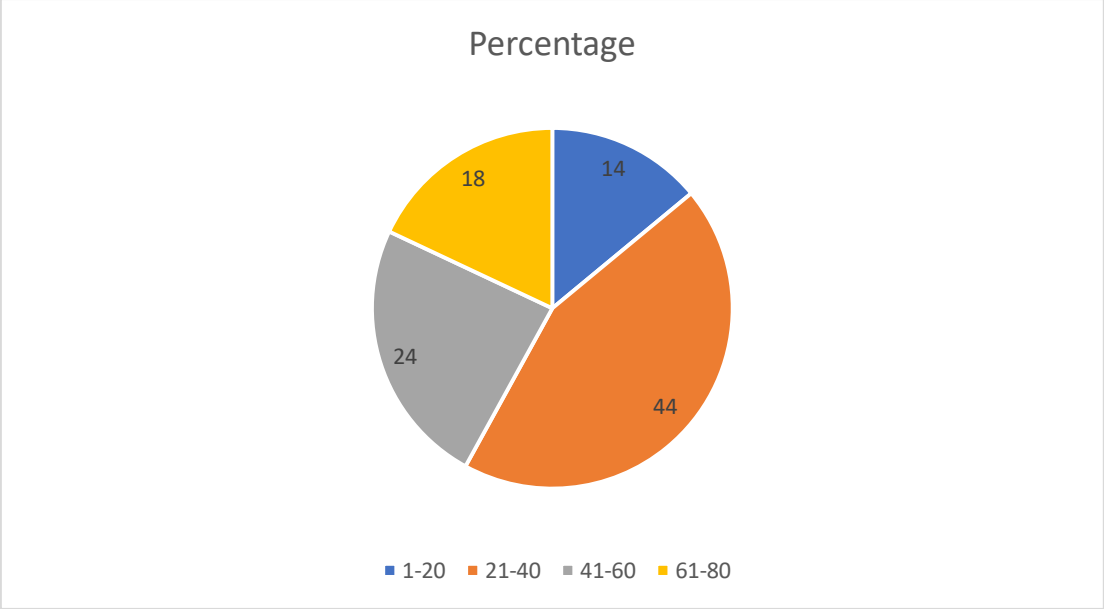

Figure 2: Age distribution.

3. Occuptional distribution: About 50% (n=25) of the patients were found to be working in metal industries.

Table 3: Occuptional distribution

Occupation	Number of patients (n)	Percentage(%)
Metal industry workers	**25**	**50**
Construction workers	**12**	**24**
Agriculture	**8**	**16**
Automobile workers	**3**	**6**
Others	**2**	**4**

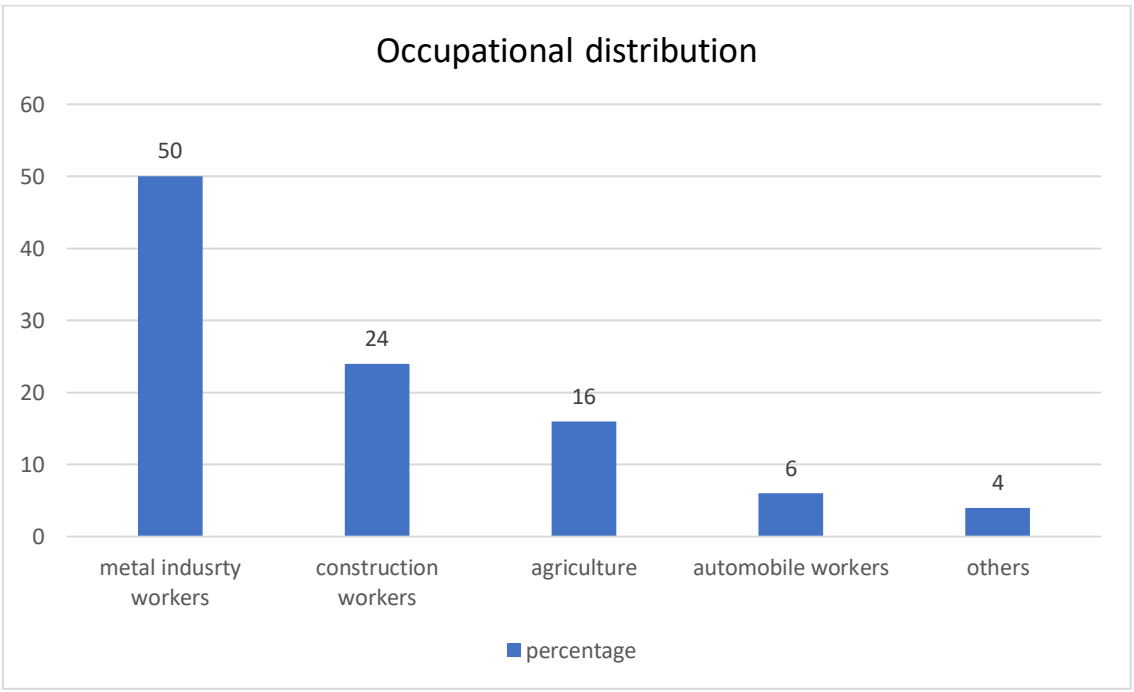

Figure 3: Occuptional distribution

4. Types of corneal foreign bodies: Most common foreign body was metallic iron particles accounting for 40% (n=20)

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Table 4: Types of corneal foreign bodies.

Foreign body material	Number of patients (n)	Percentage (%)
Metal particles	20	40
Dust particles	10	20
Insect wing	8	16
Wood piece	7	14
Glue	2	4
Colour	2	4
Stone particles	1	2

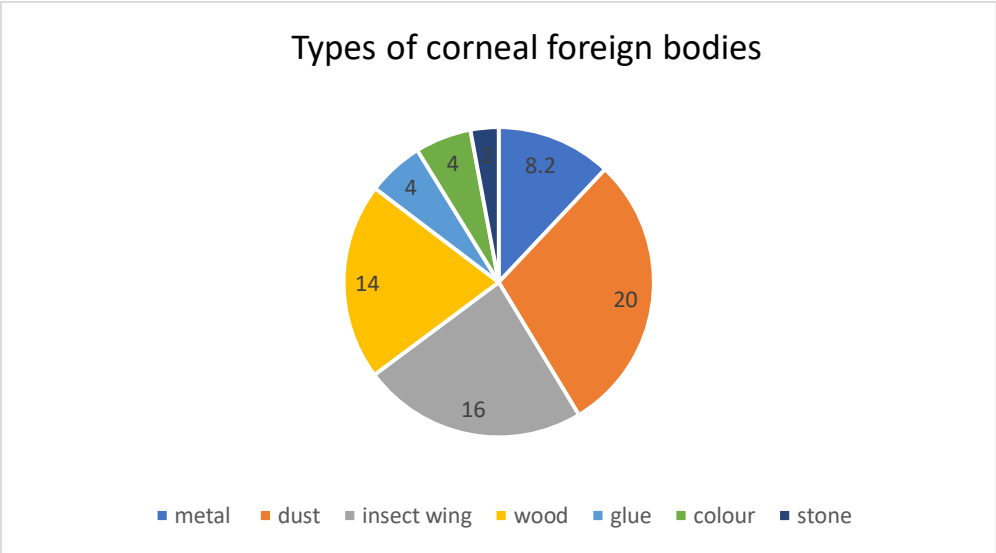

Figure 4: Types of corneal foreign bodies.

5. Location of foreign body: Most common site of foreign body was found in paracentral area i.e. 60% (n=30).

Table 5: Location of foreign body.

Location	Number of patients (n)	Percentage (%)
Paracentral	30	60
Peripheral	13	26
Central	7	14

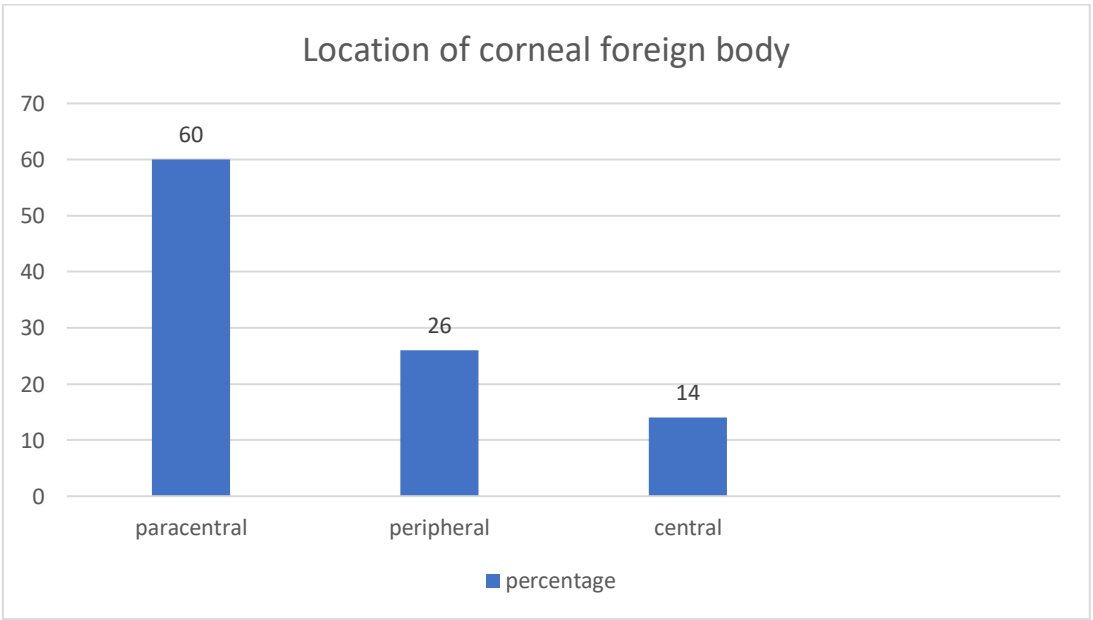

Figure 5: Location of foreign body.

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DISCUSSION

Corneal foreign bodies are classified as minor ocular trauma. If removed promptly, they usually do not cause complications; however, delays or neglect can lead to conditions such as keratitis and endophthalmitis. In our study, 94% of affected patients were male, a trend also observed in studies by Ozkurt et al. [12] and Macedo et al. [8]. The predominance of males may be attributed to their higher employment rates in metal industries, as they are often the primary earners in their families.

The majority of affected individuals (44%, n=22) were between 21 and 40 years old. This finding aligns with research by Bruce-Chwatt et al. [13], who reported that the most commonly affected age group falls between the second and fourth decades of life (21-40 years). Similarly, Reddy et al. [14] found that 50.16% of cases involved individuals aged 31-40 years.

In our study, 50% of cases involved individuals working in metal industries. This is consistent with findings by Gumus et al. [15], where 59% of affected patients were metal industry workers. Likewise, Nepp et al. [16] reported that 70% of corneal foreign body injuries occurred in individuals engaged in metal cutting industries. Reddy et al. [14] also found that 53.27% of their study population were industry workers.

Regarding the type of foreign bodies, 40% were metallic, followed by dust particles (20%). This aligns with Reddy et al.'s study [14], where metallic foreign bodies accounted for 51.04% of cases, followed by dust (18.7%) and wooden particles (11.21%). Similarly, in the study by MH et al [17] on the "physiological healing power of corneal foreign bodies" metallic foreign bodies were found in 32 patients and sand particles were observed in any two cases.

The most common location of corneal foreign bodies in our study was the paracentral area (60%), followed by the peripheral region (26%) and the central area (14%). Reddy et al [14] reported similar findings, with paracentral involvement in 61% of cases, followed by peripheral (23%) and central (26%) locations.

CONCLUSION

Corneal foreign bodies are most commonly seen in middle-aged men, who are typically active income earners in the community. While these injuries are usually treatable, delays in treatment can lead to various levels of ocular morbidity, from minor epithelial defects to vision-threatening corneal ulcers. We recommend that individuals working in metal industries or construction sites, wears appropriate protective eyewear with side protection to reduce the risk of such injuries.

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