Original Article

Superficial Corneal foreign body (FB) removal with magnifying loupe versus slit lamp and the effect of patching versus without patching - A comparative study.

Md. Shaheen Reza Chowdhury[1], Md. Abdul Salek[2], Nazrul Islam[3]

[1]Associate Professor, Department of Ophthalmology, Dhaka National Medical College, [2]Registrar, Department of Ophthalmology, Dhaka National Medical College, [3]Professor, Department of Ophthalmology, Dhaka National Medical College.

Abstract

Purpose

To observe the outcome of superficial corneal foreign body removal with Slit lamp & Magnifying Loupe, effect of healing and pain relief with or without patching.

Methods

A prospective random study was conducted at Dhaka National Medical College from 01 Januar 2012 to 31st December 2014. 200 eye patients of 150 patients who presented with superficial corneal FB in Ophthalmology department were studied. Inclusion criteria includes only superficial corneal FB. Exclusion criteria were conjunctival foreign body, Intraocular foreign body, patients below 10 yrs age. Verbal consent was obtained.

Observation parameters included Superficial corneal foreign body removal with slit lamp 100(50%) and by magnifying loupe 100(50%) and using 26g hypodermic needles. All foreign bodies removed under topical anesthesia. Half of the patients were provided with eye patch and half without patch .

Result

Male were 144 (96%) and rest female. 120(80%)of the patients are 15-40 years. Rust mark remained in 20(10%) eyes with loupe removal. Two cases developed dimness of vision due to corneal scar. Time of resolution was 5.35±1.52 days. Three patients developed infectious keratitis. Most patients 96(64%) attempted to remove FBs by themselves. Scar marks were more in self removal as well as loupe removal group. Healing time was same in both types but pain relief was more in with patching. Patching was more effective in abrasion of more than 10 mm size. Patch causes loss of binocular vision temporarily but patients felt better then without patch.

Conclusion

Slit lamp removal is better in case of metallic FB, since the rust can be removed meticulously. Post removal patch and without patch had same effect on healing but pain relief was better with patching.

Keyword: *Superficial Corneal, FB, Slit lamp, Magnifying loupe.*

Introduction

A superficial corneal foreign body (FB) is the most common and preventable eye injury and common in industrial area using lathe and welding machine.[1]

Corneal foreign bodies are extremely common and causes considerable irritation. Inflammatory infiltration may also develop around any foreign body of long duration. If foreign body is allowed to remain, there is a significant risk of secondary infection and corneal ulcer. Mild secondary uveitis is common with irritative miosis and photophobia.[2]

Ferrous foreign bodies even of few hours duration often result in rust forming and staining of bed of the abrasion.[2] Metallic foreign bodies are often sterile, perhaps due to acute rise in temperature during transit through the air, organic and stone foreign bodies carry a higher risk of infection.[2]

FBs can decrease the quality of vision by causing scars on the visual axis and secondary infections ranging from keratitis to endophthalmitis.[3,4] The health care costs for these injuries are another problem as they create an economic burden.[5]

Prevention of FB accidents and their potentially serious consequences are certainly possible and the investment in their prevention is easily justified.

Wearing appropriate protective goggles prevents about two thirds of these accidents.[6] In addition to the use of personal protective measures it is important to improve workplace standards and provide appropriate training for supervisors.[7]

Methods

A prospective randomized study was conducted at Dhaka National Medical College from 1st January, 2012 to 31st December, 2014. 200 eye of 150 patients who presented with metallic and non metallic corneal FB in ophthalmology department were studied. Inclusion criteria includes only superficial corneal FB which lies upto anterior stroma. Exclusion criteria were conjunctival FB, Intraocular FB, patients below 10 yrs age and presence of corneal infection. Verbal consent was obtained.

Observation parameters included removal with slit lamp 100(50%) and by magnifying loupe 100 (50%) and using 26g hypodermic needles. All the foreign bodies were removed under topical anaesthesia 0.4% oxybuprocaine.

Management objectives included relieving pain, avoidance of infection and preventing permanent visual morbidity. After removal of corneal foreign body, patching was given with moxifloxacilin antibiotic drop and ciprocin eye ointment to 100(50%).Those without patch100 (50%) were treated with antibiotic moxifloxcilin drops and lubricants. In larger (more then 10mm size) epithelial defects, cycloplegic were added to prevent pupil spasm. Paracetamol 500mg were prescribed to achieve analgesia.

The locations of the FB was identified and graded as central, paracentral and limbal. Rust marks were noted after removal of FB, time of first visit to an Ophthalmologist, availability of protective goggles at work place, protective goggle use during the incident, attempted FB removal by the patient themselves.

Results

150 subjects were examined in this study. Among them male were 144 (96%) and female were 6(4%). Most 120(80%) of the patients are 15-40 years, followed by more than 41 yrs and 11-14 yrs 5%.Mean age of the study group was 35.57.

Fig-I: Age and gender distribution

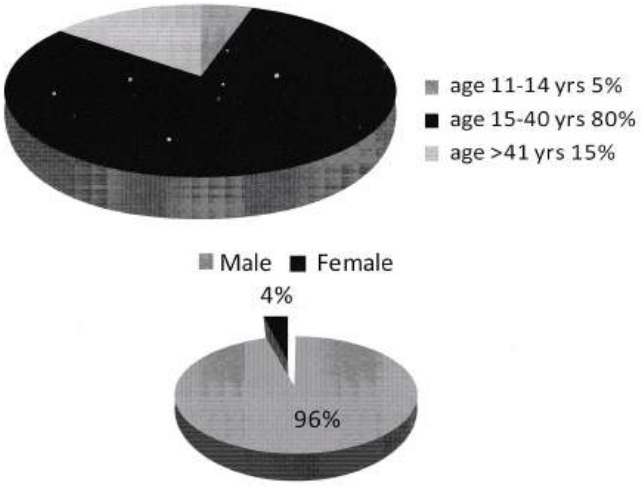
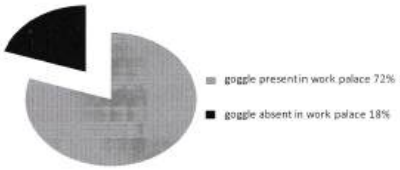
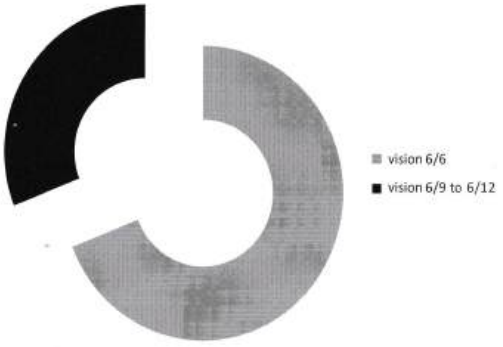


Figure-II: Protective goggles used.



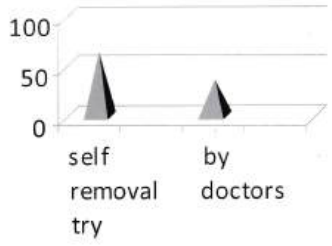
Protective goggles were available in the workplace of 108(72%) patients. However 120(80%) patients were not wearing goggles when the accident occurred and 66(44%) were injured despite goggle use.

Figure-III: Location of FB and vision of affected eyes:-



FBs were located in the central zone of the cornea in 62(31%), paracentral 108(54%) and 30(15%) limbal region. Rust marks remained after FB removal in 20(10%) eyes in cases of loupe removal but no rust marks present after slit lamp removal. There were no vision change due to corneal scar in the paracentral 76(38%) and peripheral 14 (07%) regions that is visual acuty 6/6 in paracentral and limbal. 02(two) cases(central) dimness of vision were noted due to corneal scar. Slit lamp removal causes faint scar mark than loupe removal.

Table-IV: Material used for self removal Vs removed by Doctors.



Most patients 96(64%) first tried to attempt to remove FBs by themselves. Failed cases and others were removed by ophthalmologist. Scar marks were more in self removal cases. Symptoms showed a statistically significant improvement in all patients except three who developed corneal ulcer, two of them from without patching and one with patching.

First visit to an ophthalmologist was ranged between 0 and 05 days. Time of resolution of the corneal defect was 5.35±1.52 days with an average of the 2.1±1.2 days

Discussion

Corneal injury due to a superficial FB is a very common injury in Bangladesh and worldwide. Occupational injury by corneal FB comprises 35%-58% of all ocular trauma [9,10,] and more frequently affects young men.[11] In our study, subject examined were male 144(96%) and female were 6(4%). Most of the patients120(80%) are 15-40 years, followed by more than 41 yrs (15%) and 11-14 yrs 5%.This is similar to.[11]

Superficial foreign bodies that are removed soon after the injury and epithelial one leave no permanent sequelae. However, infection may occur when delayed or self removal with unsterile material. The longer the time interval between the injury and treatment, the greater the likelihood of complications.

In our study population 96(64%) patients attempted removal by themself using materials that can further damage and infect the eye. OzakurtZG, Yuksel Het al[12] found that 52% patients attempted FB removal by themselves. This is similar to our studies.

Protective goggles were available in the workplace of 108(72%) patients. However 120(80%) patients were not wearing goggles when the accident occurred and 66(44%) were injured despite goggle use. Ozakurt ZG, Yuksel Het al.[12] study showed goggles were available in the workplace of 64%, 45% patients sustained an eye injury while wearing some form of eye protection.[11]. In a similar study, 57% patients were not wearing goggles when the accident occurred, and 43% were injured despite goggle use. Educated persons mostly used goggles.

FBs were located in the central zone of the cornea in 62(31%), paracentral 108(54%) and 30(15%) limbal region. Rust marks remained after FB removal in 20 (10%) patients which was removed by loupe. Visual acuity remained 6/6 in paracentraI & limbal. From central FB removal two cases resulted in dimness of vision 6/9 due to corneal scar. Ozakurt ZG, Yuksel Het al.[12] Showed FB located in the central zone of the cornea in 16%, paracentral 61% and peripheral 23% patients. Resutls were nearly similar to this study.

Healing and pain relief were same in cases of small corneal abrasion but in large corneal abrasion patching is better than non patching. Larger size of abrasion need more time in cases of non patching. Proper patching is more important otherwise healing as well as pain relief is delayed. This observation was similar with Harminder Dua, University of Nottingham.[13]

Conclusion

Silt lamp removal is better in case of metallic FB, since the rust can be removed meticulously. Post removal patching as well as non patching had same effect on healing but pain relief is more in patching. If superficial foreign bodies that are removed soon after the injury and FB in the epithelial level leave no permanent sequelae, The longer the time interval between the injury and treatment, the greater the likelihood of complications. A corneal foreign body is a common cause of visual morbidity and loss of working hours. By consistently wearing proper safety eye glass, which is the easiest and most effective preventive measure, loss of sight can easily be prevented after an eye injury.

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