

Spectrum of Ocular Injuries at Stone Crushing Industry

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ABSTRACT

Purpose: To determine the pattern, proportion, burden and impact of eye injuries presenting at emergency department of Niazi Medical And Dental College from stone crushing industry Sargodha.

Method: The study was conducted from Jan 2018 to Dec 2019 at Niazi Welfare Teaching Trust Hospital affiliated with Niazi Medical and Dental College Sargodha. It was prospective interventional study. Patient were selected on the basis of convenience sampling method. The detail history of every patient was taken like Age, sex, site, time and source of trauma. Examination carried out by torch and slit lamp and if necessary retinal examination also done. Patients are investigated for general anesthesia if surgery needed. Other Investigations like B-scan and X-ray done to rule out Intraocular foreign body in patients with history of foreign body in eye. CT scan and MRI done are also done along with head injury involvement.

Results: 250 cases were enrolled in this study. Out of which 90% were presented In emergency and 10% were referral from dispensary or general practitioner. The major source of injury was blasting at mountains. Next important was stone crushing. Most type of injury was blunt trauma in which corneal foreign body was top of list and other type of blunt trauma need medical treatment in most cases. Around 18% patients admitted for eye surgery intervention. Around 10% referred to Vitreo retinal eye surgeon for further Intervention. Most workers injured at stone crushing industry they were illiterate.

Conclusion: Eye trauma is a important cause of unilateral and bilateral cause in stone crushing industry. These workers are young and few percentage loss of total vision. It is great trauma to their families. Most are illiterate and belong to poor socioeconomic status so socially and psychologically they are great burden on the country. There should be health insurance for them. Ministry of mining should made strict rules and make their proper law enforcement.

Keywords: ocular injuries, penetrating Eye Injury, blindness

INTRODUCTION

Ocular trauma is an important cause of unocular visual impairment and blindness in the younger and economically active age group¹. Beside visual loss their working and earning capacity also badly damage and create a big burden socially and economically on society². Although ocular trauma affects the all age groups. Regarding blunt trauma Penetrating injury of the eye represents a major threat to the vision in the work place, home, school and play ground^{3,4}. Serious ocular injuries like globe rupture, orbit damage permanently loss the whole productive years of life of young people. In the past not too much work is done on this topic particularly ocular injuries in industry sector. It is very important industry because huge number of our population is attached with this industry for their earning and mostly belong to the lower socioeconomic status^{5,6}.

After agriculture, industry is our big source of earning in our country. So in this topic we focus this segment. It is the biggest stone crushing industry of Pakistan situated near the SARGODHA. A huge number of population is attached with this industry in different disciplines include labourers involved in blasting mountains, mining workers,

crushing stone workers, maintenance labourers, trucks & tractor trolley drivers and stone carriage workers and small hotel industry. Our Hospital is situated near to this industrial area and in this area there is not too much good emergency facility is available for the workers only one THQ hospital around 4-5km distance away and two to three dispensaries are present here. Even private hospital facility is also not well sufficient. So variety of trauma is being referred to Sargodha DHQ and private hospitals. As this hospital is affiliated to medical college having qualified staff, has become the referral center for last 2 years and the numbers of patients are increasing with the passage of time.

Regarding Spectrum of ocular injuries, this study helps us in planning better health facilities and safety strategies for the prevention and treatment of ocular injury. The young man power is our future assets.

MATERIAL AND METHOD

The study was conducted from Jan 2018 to Dec 2019 at Niazi Welfare Teaching Trust Hospital affiliated with Niazi Medical and Dental College Sargodha. It was prospective interventional study. Patients were selected on the basis of probability convenience sampling method. Most of the patients come from our hospital emergency department. The detailed history of every traumatic patient was taken with particular reference like their age, time of injury, type

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of injury, occupation and mechanism of injury and recorded. After that all patients were thoroughly examined. Visual acuity is checked by snellen's chart. Initial examination was done with torch and slit lamp and if possible retinal examination also performed. Relevant investigations like Blood Complete and chest x-ray for general anesthesia done. Specific investigations like x-ray orbit, B-scan of the orbit done for intraocular foreign body. X-ray skull and CT-brain is done to rule out head injury problems. Patients with superficial injuries like abrasion, foreign body in cornea discharged while patients of serious injuries like penetrating injury, globe perforation, corneal perforation were admitted and properly managed. Cases having Intraocular foreign body, retinal detachment vitreous haemorrhage were referred to vitreous retinal surgeon after giving him necessary primary treatment.

RESULTS

The total number of patients included in this study were 250 in which 225 were come from our energy department and 25 was referred from the dispensary and general practitioner in stone blasting areas. Almost total ocular trauma was come from stone blasting area as it is spread in 25-30 km.

Table 1: Referral source

Source	n=250
Emergency	225 (90%)
Referral	25(10%)

Table 2: Source of injury

Source of injury	n=250
Mountain Blasting	155(62%)
Stone crushing	60(24%)
Stone loading	20(8%)
Stone transportation	10(4%)
Mechanical work shop	5(2%)

Table 3: Type of injury (n=250)

Type of injury	n
Blunt trauma	200(80%)
Anterior segment	
Corneal foreign body	119 (59.5%)
Abrasion	23(11.5%)
Hyphaema	17(8.5%)
Traumatic cataract	14(7%)
Posterior segment	
Vitreous haemorrhage	11(5.5%)
Retinal detachment	9(4.5%)
Intraocular foreign body	7(3.5%)
2. Globe penetration	30(12%)
3. Globe perforation	15(6%)
4. Others (lid and face burn after blasting, facial and orbital fracture)	5(2%)

Table 4: Educational status of patients (n=250)

Literate	n
Primary	32(12.8%)
Secondary	25(10%)
Higher	12(4.8%)
Illiterate	181(72.4%)

Regarding source of injury that major source was mountain blasting. It is very dangerous trauma because most of patients loss their both eyes. They have surgical and orthopedic injuries as well. While in other source of injuries like road traffic accidents (RTA), kitchenware injuries, hammering and chiseling, mostly eyes are involved but rest of body is spared. Regarding type of injury blunt trauma was most common. In emergency most patients present with foreign body problem. Almost 25% of patients need admission for corneal repair and globe repair. 5%-10% patients are referred to vitreoretinal surgeon for further treatment. Most of workers attached with the industry are illiterate. Around 30% population is primary and secondary level of education.

DISCUSSION

Ocular trauma is one of the major causes of unocular blindness. But in our study the major source of trauma is blast injury. So many patients had bilateral, visual loss. It is very shocking for society and country. They are big problem for their family because they loss of vision in young age. So it is big emotional trauma for their family and whole society. They also belong to the low socioeconomic status as well. The eye emergency make about 20% of total emergency trauma come at Niazi Welfare Teaching Trust Hospital from January 2018 to December 2019. We attend total 250 number of cases out of which 59.5% have foreign body in their eyes. 30% need conservative treatment. Regarding type of injuries with different studies conducted in Pakistan and other countries around 13% patients referred to vitreoretinal surgeon^{7,8}. It also agree with many studies. But it contradict with one study conducted. The population of hospital admission in this study was 18% which was in between two studies conducted by Panda and colleagues (27.8%) and other was conducted in Ireland (8.4%)^{9,10}.

Most of injuries were found in males and all patients in our study were male because they come from stone crushing industry this thing also coincides with other studies^{11,12}. In our study most of the patients were illiterate. This things varies from study to study. Some study conducted in city hospital or urban area their literacy rate is more. The most important feature of our study is that major portion of source of injury in this study is mountain blast injury. This thing differ it from routine articles of ocular trauma. Because this trauma has a deleterious effects. Most of the patients loss their complete vision and they are young at their maximum years of productivity. Even many died in blasting at spot before reaching hospital as tell by their colleagues. They belong to poor socioeconomic status. They were mostly illiterate and have no health insurance of their life, families and work. A lot of workers died every year in stone blasting industry. When we compare with different study one study data was very shocking in whole they show bilateral damage of eyes in 78.4% cases and out of which 37.3% were totally blind^{13,14,15}.

CONCLUSION

The prevalence of blindness caused by different type of blasting rocks and mountains is quite high. The resulting psychological financial and social loss to the patients and

their families is tremendous and has not been adequately highlighted. These injuries are great burden on our country economy. There should be health insurance programme. There should strict enforcement of law. Regarding preventive measure and sophisticated equipments the ministry of mining should pay great attention on these things.

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