Occupational Hand Injuries Presenting at Accident and Emergency Department / Mayo Hospital Lahore. A Review of Six Months

Akram M.,[1] S.M. Awais,[2] Rabiulislam M.,[3] Asif H.[4]
Address for Correspondence: *Dr. Mohammad Akram, Senior Registrar, Ortho Unit – I, KEMU / Mayo Hospital, Lahore*

Background: Hand injuries constitute a significant number of trauma patients all over the world. Advanced countries have well equipped hand surgery units with well trained hand surgeons and paramedical staff. Hand injuries are more frequent in under developed countries with very little specialist care.

Objectives: The objectives of this study were to collect data to have knowledge about hand injuries in the largest hospital of Pakistan (Mayo Hospital Lahore), to know the prevalence, handedness, mode and types of hand injuries and their socioeconomic impact.

Methods: Over a period of six months 324 patients of acute hand injuries were analyzed and data were entered on a prescribed proforma and analyzed using SPSS 11.5 software.

Results: There were 324 patients out of these, 309 were males and 15 were females. The mean age of all patients was 26.84 years ranging from 12-62 years. Considering the fractures there were 111 thumb, 122 index, 45 middle, 2 ring and 40 little finger involvements. It was also seen that there were 37 amputations out of these 4 amputations were at or just distal to wrist level. Hand soft tissues included 162 skin injuries, 41 tendon injuries and 16 neurovascular injuries. Finally, according to procedures performed, there were 139 backslab applications, 148 wire fixations. According to type of anesthesia used, there were 175 local, 2 regional, 6 general anesthesias and in 141 no anesthesia was used.

Key Words: Hand Injuries and Occupational Injuries.

Introduction

Hand is one of the most important structural assets of human body. The other name of hand is earning tool. Loss of hand functions mean loss of earning capacity. For every important work in daily life, we need to use our hands. If some body losses his hand or hands, he becomes handicapped and cannot perform his normal functions of daily life properly.[1] It is a common knowledge that hand injury is quite common in Pakistan. Many occupations make a person vulnerable to hand injuries due to inexperience, lack of training, performing an unusual work task, working overtime, personal worries, feeling ill, malfunctioning equipment/materials using different work methods, being distracted and rushing all contributing to the increased incidence of hand injuries in Pakistan.[2] We know that all injures are preventable and if we can prevent such injuries, we may save the person from undue hospitalization, absence from work and handicapped life.[3]

Acute traumatic hand injuries in manual and occupational workers constitute a unique orthopaedic challenge world wide, because of the particular demands on the workers e.g. financial implication, administration pressure and self-esteem issues. A specialized management approach is often necessary.[4] Hand injuries are common and account for 5-10% of emergency department visits nationwide.[5] A lot of small industries are situated in and around Lahore city like, plastic industry, leather industry, press machines, metallic and paper cutting machines. A peculiar feature of these industries is that they employ young inexperienced workers who work without proper training and protective gadgets. Patients come with crush hand, some with lacerated soft tissues and bony injury (ies); some are coming with fingers or whole hand amputated. Manual workers work in a close environment without proper light and ventilation with long duty hours which leads to the workers loosing their hand(s).[6]

Objectives

The objectives of this study were to:

Collect data to have knowledge about hand injuries in the largest hospital of Pakistan (Mayo Hospital Lahore), to know the prevalence, handedness, mode and types of hand injuries and their socioeconomic impact by knowing the followings:

1. Patient's demography.
2. Mechanism of Injury.
3. Assessment of Morphology of Injury.
4. Initial management of injuries.(in A & E Dept).

Materials and Methods

Research Design: It was a cross sectional study design.

Setting: Accident and Emergency Department, Mayo Hospital Lahore, Pakistan.

Sample Size and Duration: It was a time based study over six months from 1st Feb – 31st July 2005.

Sample Selection:

(a) **Inclusion Criteria**

1. Acute hand injuries with in 6 hours of occurrence.
2. Occupational hand injuries cases.

(b) **Exclusion criteria**

1. Old cases more than 6 hours.
2. Paediatric patients
3. Poly trauma patients with associated hand injury (ies).
4. Those patients requiring advance life support care

Sampling: It was a consecutive sampling technique.

Methodology: This cross sectional study was conducted in the Accident and Emergency Department of Mayo Hospital Lahore. Patients with fresh injury were interviewed to collect information regarding their health, personal, occupational and morbidity details. A proforma was made for this study which specifically depicted age, gender, handedness, occupation, salary, dependent persons in the family, and help from social department.

Data Analysis: Using SPSS 11.5 data were analyzed, selective tables and graphs were used to express the variables, descriptive statistics was used in the form of Mean, Mode, Standard deviation and range for numeric data and Rates and ratios were used to express the qualitative variables.

Result

There were 324 patients out of these, 309 (95.37%) were males and 15 (4.63%) were females. The mean age of all patients was 26.84 years ranging from 12-62 years. Mostly patients were from urban areas i.e. 245 (75.61%) as compared with rural i.e. 79 (24.29%). According to socioeconomic status mostly patients were poor i.e. 271(83.6%). Typically 221 (68.21%) patients were illiterate. In addition 139 (42.90%) patients were laborers and 111 (34.26%) were manual workers. Manual workers with dependent family members were more significant (*p-value = 0.0026*). According to fracture type there were 81 (25%) closed and 243 (75%) open fractures. Moreover there were 130 (40.12%) right side involvement out of these 128 (98.46%) were having dominant right side and 185 (57.1%) left side involvement and out of these 8 (4.32%) were having their left side as dominant. Bilateral involvement was seen in 9 (2.78%) patients only. According to fractures there were 111 (34.25%) thumbs, 122 (37.65) index, 45 (1.89%) middle, 2 (0.61%) ring and 40 (12.34%) little finger involvements. We also analyzed that there were 37 (11.42%) amputations out of these 4 (1.23%) amputations were at or just distal to wrist level. According to soft tissues involvement, there were 162 (50%) skin injuries, 41 (12.65%) tendon injuries and 16 (4.94%) neurovascular injuries. Finally, according to procedures there were 139 (42.90%) backslab applications, 148 (45.67%) wire fixations. According to type of anesthesia used, 175 (54.01%) local, 2 (0.617%) regional, 6 (1.85%) general anesthesia and in 141 (43.51%) patients anesthesia was not given.

Table 1: *Descriptive statistics for age and dependent children, brothers and sisters.*

	Age of Patients in years	No of Children	No. of Brothers and Sisters
Mean	26.84	N.A	N.A
Median	24.00	N.A	N.A
Mode	20	None	None
Std. Deviation	10.692	1.458	2.866
Range	50	6	10
Minimum	12	0	0
Maximum	62	6	10

**NA = Mean and Median is not applicable for discrete data*

Table 2: *Frequency table for non-numeric data.*

		Frequency (%)	p-value
Gender	Male	309 (95.37%)	0.000 **
	Female	15 (4.63%)	
Area	Urban	245 (75.61%)	0.000 **
	Rural	79 (24.29%)	
Occupation	Laborers	139 (42.9%)	0.000 **
	Manual workers	111 (34.26%)	
	Others	74 (22.84%)	
Fracture Types	Closed	81 (25%)	0.000 **
	Open	243 (75%)	
Side involvement	Right	130 (40.12%)	0.000 **
	Left	185 (57.1%)	
	Bilateral	9 (2.78%)	

*** Males, urban workers, laborers and manual workers, open fractures, right and left sides involvements are statistically significant in hand injuries.*

Discussion

Hand injuries are frequent and reported for 5-10 out of 100 of emergency department visits.[5] In this study the prevalence of hand injuries was 13.6%. In the study by Hill et al reported that among the victims, two groups of workers found especially liable to occupational hand injury were the machine operators with less than 1 year of experience and the new immigrants from China.[8] In this study patients with fresh injuries were interviewed and revealed that there was no prior training and proper

facilities. Workers were from different geographical locations e.g. surrounding areas of Lahore and other villages. Poor machine design, adverse work environment and personal risk factors are associated with only small proportions of occupational injury[8] these were the major contributing risk factors in present study. In another study for acute occupational hand injuries, seven transient risk factors that were mostly modifiable were identified: using malfunctioning equipment/materials, using a different work method, performing an unusual work task, working overtime, feeling ill, being distracted and rushing.[9] These seven transient risk factors were also seen and proven in this study. It was also noticed that wearing gloves had an insignificant protective effect on the occurrence of hand injury. In the study conducted by Hill et al, external factors such as work and social conditions seemed to have less influence on time off work than expected, whereas advice from doctors, flashbacks and impairment symptoms were important determinants.[8-14]

Conclusion

In this study we conclude that males, urban workers, laborers and manual workers are more likely to get hand injury. Hand injury is not a problem of patients only but also a problem of dependent family members. We can save hands by proper trainings and should be aware of safety measures. Separate hand care units should be established which at the present do not exist in this country. NGOs should realize this and should come up with this issue and should press the government by taking this issue through media.

References

1. Hung LK, Yip KK, Leung PC. Recent changes in the pattern of hand injuries in Hong Kong: a regional hospital survey .HKMJ 1997; 3 (2): 141-148.
2. Chor Yiu Chow, Hencher Lee, Jess Lau and Ignatius Tak-Sun Yu, Transient Risk Factors for Acute Traumatic Hand Injuries—A Case Crossover Study in Hong Kong. Occup Environ Med 2006; 2007; 64: 47-52.
3. Rey P and Bousquet A. Compensation for occupational hand injuries and its effect upon prevention at the workplace. Ergonomics. 1995; 38 (3): 475-86.
4. Simon RR, Slobodkin D. Injuries to the wrist and hand. In: Emergency Medicine 1996; 4: 1217-35.
5. Lese AB. Hand Injury, Soft Tissue. e-medicine: Aug 21, 2006.
6. Metcalf W and Whalen W. The surgical, social and Economic Aspects of Hand Injury. Journal of Bone and joint Surgery 1957; 39: 317-324.
7. Sorock GS, Lombardi DA, Hauser R, Eisen EA, Herrick RF and Mittleman MA. A case-crossover study of transient risk factors for occupational acute hand injury. BMJ Publishing Group Ltd. 2004; 61: 305-311.
8. Hill C, Riaz M, Mozzam A, Brennen MD. A Regional Audit of Hand and Wrist Injuries. Journal of Hand Surgery - British 1998; 23 (2): 196-200.
9. Kleinfeld F, Bassler R. Clinical picture and pathomorphology of traumatic Hand injuries. Journal of Orthopaedic Research, 1998; 16 (3): 309-13.
10. Choyce MQ, Potts M and Maitra AK. A profile of sports hand injuries in an accident and emergency department. Journal of Accident and Emergency Medicine, 1998; 15, Issue 1: 35-38.
11. German G. Sherman R. Levin LS. Decision making in reconstructive surgery upper extremity. New York 1999 Springer varlag.
12. Hans-Eric R and Dahlin LB, Epidemiology of hand injuries in a middle-sized city in Southern Sweden: a retrospective comparison of 1989 and 1997. Scandinevian journal of plastic and recon surg and hand surg 2004; 38: 347-355.
13. Gustafsson M, Ahlstrom G. Emotional distress and coping in the early stage of recovery following acute traumatic hand injury: a questionnaire survey. Int J Nurs Stud. 2006; 43 (5): 557-65.
14. Khan H. Review article of child hood in Pakistan: the situation, the challenges and the response. The journal of the Pakistan Medical association 2006; 3 (2).