

Original Research Article

Pattern of hand injuries: a two year review of cases in S. Nijalingappa Medical College and HSK Hospital, Bagalkot

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ABSTRACT

Background: Hand injuries are common, leading to loss of function with attendant psychological consequences. The pattern of the injuries varies from place to place, responsible for a significant hospital emergency visit and most of which are seen by non-hand specialists. It is pertinent that those who may come across the patients understand this pattern.

Methods: A retrospective review of records of patients presenting with hand injuries to the plastic surgery department over a two year period was carried out highlighting the pattern of the injury.

Results: A total of 95 patients predominantly males sustained hand injuries. Most of the patients were in their 20s. Road traffic injury been the commonest cause of injury followed by machines with high incidence of injury of the Right hand which was 53.6%. Soft tissue injuries occurred in 79% of cases, bony injuries occur 14% of cases and tendon injuries in 7% cases.

Conclusions: Understanding the pattern of injury can impart positively on the management of hand injuries and for its preventive measures of safe road and education of the people on the use of tools and machines in our environment.

Keywords: Hand, Injuries, Pattern

INTRODUCTION

According to World Health Organization (WHO) data for 2000, an estimated 5.2 million injury related deaths occurred worldwide, comprising almost 9% of all deaths.^{1,2} The hand is a very important part of the body used for exploratory and manipulatory activities involved in prehension. The hand with its 27 muscles and 27 bones is strong, flexible and able to perform many fine movements. Hands often get injured and thereby incapacitating the patient if proper care is not given. Injury to the hand contributes moderate to severe disability and morbidity which directly affect the functional capability of the individual which has a lot of psychological consequences. Therefore a rapid and

accurate initial evaluation of the injury is needed to reduce the risk. Given this importance, hand injuries are a real burden to society and therefore worthwhile to be prevented.³ The dilemma in management is compounded by the paucity of literature on the pattern of hand injury in this environment as very few studies had been done in this locality on the pattern of the hand injuries presenting to us. This makes hand injury an often mismanaged injury. This study evaluates the peculiarities of the epidemiology of the various causes of hand injury and the pattern of presentation in our locality.

Aim and objective of this study was to review the cases presenting in the hospital with hand injury with a view to identify epidemiology and causes.

METHODS

Record based case series was done at HSK hospital , Bagalkot, from 2018- 2020. Sample size estimated was 95. Sample size is estimated using software “Openep: software version 3” at p as 43% and 10% precision for most common pattern is crush injury according to the study conducted by Adigun et al.⁹

Formula used by software: $(DEFF * Np(1-p)) / [d^2 / Z^2(1-P)]$

Inclusion criteria

Patients with injuries involving only hands, patients with no vascular compromises at site of injury, patient with no gangrenous/pre gangrenous changes of hands or digits were included in the study.

Exclusion criteria

Patients presenting 72 hours after injury, patients of whom complete records not available, patients with injury involving wrist of forearm, no hand injury or polytrauma were excluded from the study.

A record based study of patients that presented to the plastic surgery unit in S N Medical College and HSK Hospital, Bagalkot with hand injuries over a two year period from 2018 to 2020 was carried out. The case files of these 95 patients that were managed in the division over this period were retrieved and analysed. The demographic data age, sex, as well as the handedness and cause of injury were retrieved and inputted in a database created using the Statistical Package for Social Science version 16. The hand injured was noted as well as the part of the hand injured; digits, dorsum and / or palm, finger(s) and structures injured were also retrieved for each patient.

Statistical analysis

A descriptive analysis of the data was done by invoking the frequency parameter of the Social Sciences Software (SPSS) Program for windows version 16. The results were presented in tables and charts using the Microsoft Excel 2010 software.

RESULTS

There were 66 (69.5%) males and 29 (30.5%) females with M: F ratio of 2.2:1 among the 95 patients managed during this period. One peak was observed in the age distribution at the 21-30 age group, with the highest incidence of hand injury (Figure 1).

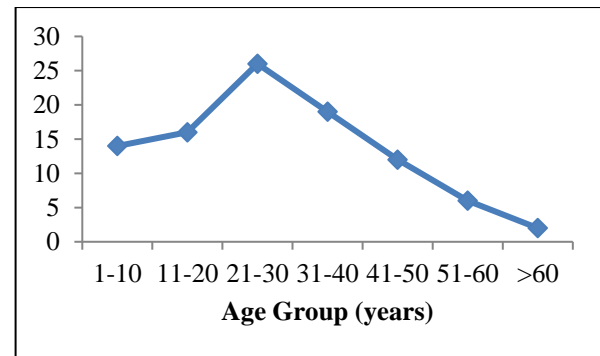


Figure 1: Age distribution.

The right hand was injured in 51 (53.6%) patients, the left in 38 (40%) and both hands in 6 (6.3%) patients (Figure 2).

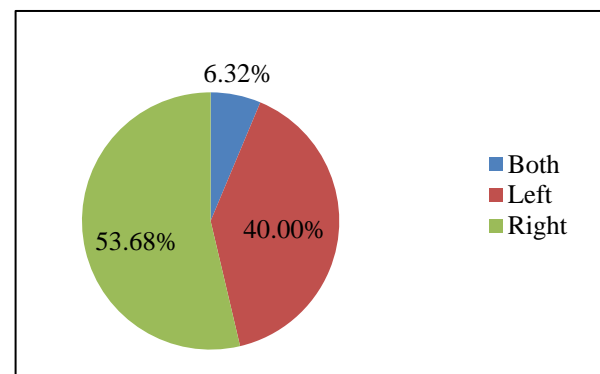


Figure 2: Handedness of patients.

Road traffic injury accounted for most injuries, representing 47 (50%) (Figure 3). Avulsion injuries is the most common injury sustained followed by crush injury. The frequency of occurrence of the injuries is illustrated in Figure 4.

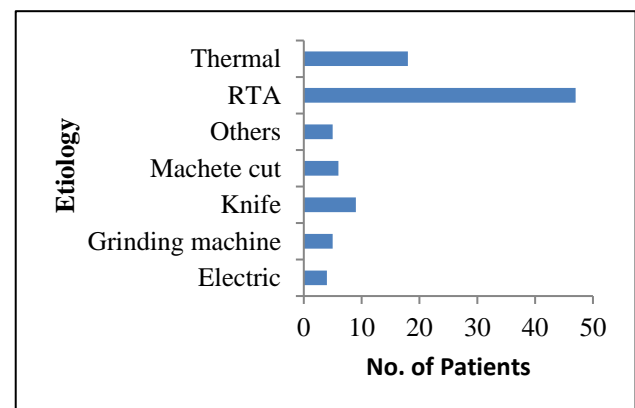


Figure 3: Aetiology of hand injury.

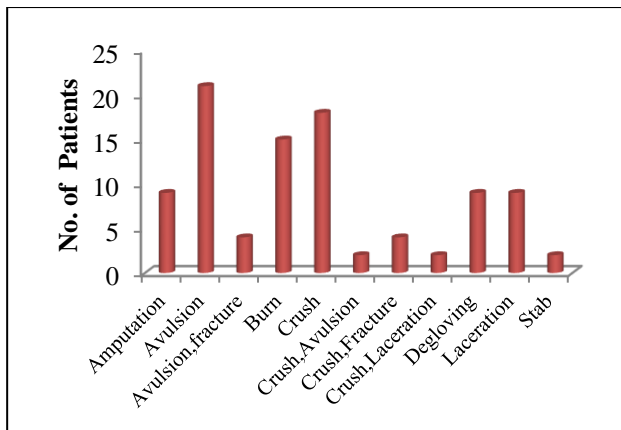


Figure 4: Description of the injury sustained.

The little finger was injured in 30(25%) patients, followed by the middle finger, palm in 23 (19.1%), 22 (18.3%) respectively (Table 1).

Table 1: The frequency of injury of various parts of the hand.

Digits	No. Of Injuries
Thumb	9
Ring finger	16
Middle finger	23
Index finger	16
Little finger	30
Dorsum	4
Palm	22
Grand Total	120

Figure 5 shows the incidence of injury sustained by the various part of the hand either singly or in combination. The skin and subcutaneous tissue were the commonly injured structures in this study than tendon and bony injuries (Figure 6).

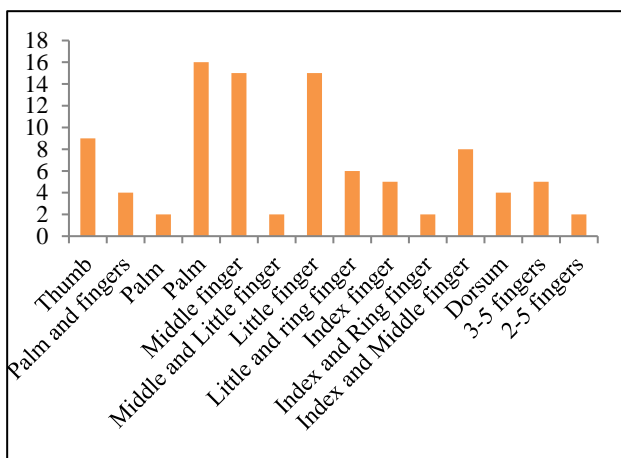


Figure 5: Illustration of the combinations of parts injured.

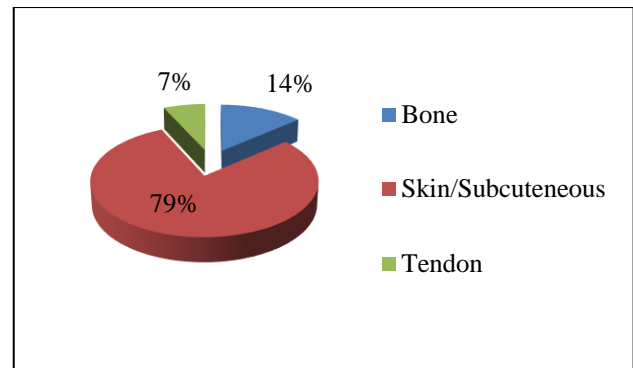


Figure 6: Structures injured.

DISCUSSION

Hands and digits of the humans occupy a major role and is one of the organs in the body that is commonly injured.^{4,5} Hand injuries have been reported to occur from several aetiologies. Injuries of the hand have an enormous impact on hand function.⁶ These injuries are as preventable as the other bodily traumas.

Although many patients with hand injuries will ultimately require definitive and long-term management by the plastic or orthopaedic surgeon, the presentation for the initial treatment in most patients is to the emergency room, it is therefore important to be aware of the pattern of hand injuries an essential first step to provide optimal and appropriate emergency and follow up care and to avoid missing any secondary injuries.

The predominant male population in this study conformed to most other studies with a M:F ratio of 2.2:1. The young adult constitute the main victims of hand injuries. This finding further corroborates the high incidence of injuries in this adventurous age group as reported by other studies conducted by Kaisha et al, Olaitan et al and Shrestha et al.^{3,4,7} The most common cause of hand injuries in the current study was road traffic crash observed in 47 (50%) patients which was in accordance to the study conducted by Olaitan et al and Shrestha et al with 29 (39.2%) patients and 30 (17.3%) patients respectively injured by RTA.

Avulsion and crush injury of the digits were the most common injury sustained followed by thermal burn injuries. This may be due to the severity of injuries sustained in road traffic injuries which is most common causes of injury. That hand injuries caused by mechanical equipment resulted in the most severe of injuries was also noted by Trybus et al in their article on causes and consequences of hand injuries.⁵

The middle and the little fingers were the parts of the hand usually injured. Road traffic injuries, with its ill defined pattern, being the most common cause of injury may be responsible for that finding.

Half of all hand injuries are fractures.⁸ However fractures only occurred in only 14% of injuries in this study. In a number of cases the tendon is involved in the injuries, a non-hand specialist may find it difficult to diagnose this with the far reaching effect on the patient.

Limitation

It was a record based study posing the problems of incomplete and / or inconclusive data. The number of patient also is small for any major inferences to be drawn. Be that as it may, it should be noted that hand injury is a technical injury to diagnose and manage, and understanding the pattern of presentation will go a long way in assisting with management.

CONCLUSION

Hand injuries require very good surveillance as it is a common problem at the accident and emergency units worldwide being a real burden on society. Knowledge of the injury patterns can assist clinicians to design a better management plan. The pattern observed in this study bore so much resemblance to those observed elsewhere. The onus is therefore on practitioners to improve on their understanding of these patterns from time to time in the interest of our patients who deserve nothing less than best practise. It is further noted that most hand injuries are largely due to preventable causes and are therefore avoidable with special attention for home and leisure accidents and occupational accidents.

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Ethical approval: Not required

REFERENCES

1. WHO. Preventing injuries and violence. Geneva. A guide for ministries of health World Health Organization. Available at https://www.who.int/violence_injury_prevention/publications/injury_policy_planning/prevention_moh/en/. Accessed on 12 July 2020.
2. WHO. The injury chart book: a graphical overview of the global burden of disease. Geneva. World Health Organization. Available at https://www.who.int/violence_injury_prevention/publications/other_injury/chartb/en/. Accessed on 12 July 2020.
3. Kaisha W, Khainga S. Causes and pattern of unilateral hand injuries. East African Med J. 2008;85(3):123-8.
4. Olaitan P, Oseni G, Olakulehin O. Pattern of hand injuries in osogbo, South-west Nigeria. J West Afr Surg. 2011;1(3):15-25.
5. Trybus M, Lorkowski J, Bronje I, Hladki W. Causes and consequences of hand injuries. Am J Surg. 2006;192:52-7.
6. Benfield R, Plurad DS, Lam L, Talving P, Green DJ, Putty B, et al. Inaba K, Cestero R, Demetriades D. The epidemiology of dog attacks in an urban environment and the risk of vascular injury. Am Surg. 2010;76(2):203-5.
7. Shrestha KM, Pandey A, Shrestha B. Pattern of hand injuries in a teaching hospital of a developing country. J Uni Med Sci. 2002;5(1):29-32.
8. Chung KC, Spilson SV. The frequency and epidemiology of hand and forearm fractures in the United States. J Hand Surg. 2001;26:908-15.
9. Adigun I, Ogundipe K, Aderibigbe A. Pattern of hand injuries in a teaching hospital of a developing country: a three year review of cases. Internet J Hand Surg. 2006;1(1):22-9.

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