PATTERN OF HAND INJURIES IN A TEACHING HOSPITAL OF A DEVELOPING COUNTRY

KM Shrestha¹, A Pandey¹, B Shrestha¹

ABSTRACT

INTRODUCTION:
Hand injuries are common and are responsible for a significant hospital emergency visit and most of which are seen by non hand specialists. The pattern of the injuries varies from place to place. It is pertinent that those who may come across the patients understand this pattern.

MATERIALS & METHODS:
A retrospective review of records of patients presenting with hand injuries to the emergency unit and in OPD unit over two year period was carried out highlighting the pattern of the injury.

RESULTS:
The common cause of hand injury in these patients was fodder cutter machines which is 53 patients (30.6%) followed by industrial machines injury in 36 patients (20.8%), road traffic accidents in 30 patients (17.3%), physical assault in 19 patients (10.9%), threshing machines in 13 patients (7.5%), fall in 9 patients (5.2%), falling objects in 8 patients (4.6%), door injury in 2 patients (1.15%) and sports injury in 1 patient (0.5%). The injury was more common in young adults between 15 to 34 years of age with the mean age of 24.5 years. Most of the injury occurred during work by fodder cutter machine and industrial machines or other causes as road traffic accidents. In the present study, 17.3% cases had injury on Saturday comprising 80.9% of males and 53.1% of cases had fractures with high incidence of injury of the Right hand which was 53.7%. Most of the cases having fractures were of Gustilo II variety (28.2%) and 94.2% of cases were of minor to moderate grades of severity of hand injury on grading by HISS grading.

CONCLUSION:
Understanding the pattern of injury can impart positively on the management of hand injuries and for its preventive measures.

KEYWORDS: Hand, Injuries, Pattern

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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. Injuries are the fifth most common cause of death among men and the sixth most common among women, according to the National Burden of Disease study.

In Nepal as per estimates of morbidity and mortality for 1998-1999, injury contributed 9% to total mortality and was the third leading cause, with road accidents occupying the eighth position in the overall ranking.

Especially burden of hand injuries are rising throughout world, constituting between 6.6% and 28.6% of all injuries and 28% of injuries to the musculoskeletal system. These injuries occur mainly during farm and industrial activities; however, they also occur at home, in public venues, in traffic accidents, and during sports activities.

Hand injury contributes moderate to severe disability and morbidity which directly affect the functional capability of the individual. Therefore a rapid and accurate initial evaluation of the injury is needed to reduce the risk.

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

MATERIALS AND METHODS

The study was conducted from 1st September 2011 to 31st October 2013, (a period of two year) at Universal College of Medical Sciences Teaching Hospital (UCMS), Bhairahawa, Nepal. UCMS is a tertiary care hospital situated in the West Nepal near the Nepal- India border. All the cases with hand injury who attended the hospital both Emergency and OPD in a above specified time period were included in this study. Specially designed proforma was filled for each patient. Statistical analysis was done by using Statistical Package for the Social Sciences Software (SPSS) Program for windows version 20. The results were presented in tables and charts using the Microsoft Excel 2010 software.

RESULTS

Between 1st September 2011 to 31st October 2013, a total of 173 patients attended UCMSTH with sustained hand injury. The injury was more common in young adults between 15 to 34 years of age (Fig.1) with the mean age of 24.5 years. The common cause of hand injury in these patients was fodder cutter machines which is 53 patients (30.6%) followed by industrial machines in 36 patients (20.8%), road traffic accidents in 30 patients (17.3%), physical assault in 19 patients (10.9%), Threshing machines in 13 patients (7.5%), fall in 9 patients (5.2%), falling objects in 8 patients (4.6%), door in 2 patients (1.15%) and sports injury in 1 patient (0.5%) (Table 1).

<table>
<thead>
<tr>
<th>Cause of Injury</th>
<th>Frequency (Percentage)</th>
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<tbody>
<tr>
<td>Fodder Cutter Machine</td>
<td>53 (30.6%)</td>
</tr>
<tr>
<td>Threshing Machine</td>
<td>13 (7.3%)</td>
</tr>
<tr>
<td>Physical assault</td>
<td>19 (10.9%)</td>
</tr>
<tr>
<td>Falling object</td>
<td>8 (4.6%)</td>
</tr>
<tr>
<td>Fall</td>
<td>9 (5.2%)</td>
</tr>
<tr>
<td>Factory Machine</td>
<td>36 (20.8%)</td>
</tr>
<tr>
<td>RTA</td>
<td>30 (17.3%)</td>
</tr>
<tr>
<td>Sport</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>Door</td>
<td>2 (1.15%)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (1.15%)</td>
</tr>
</tbody>
</table>

Table 1: Causes of injury

Most of the injury occurred during work (35.8%) by fodder cutter machine and industrial machines or other causes (32.9%) as road traffic accidents. In the present study, 17.3% cases had injury on Saturday comprising 81% of males and 53.1% of cases had fractures with high incidence of injury of the Right hand which was 53.7%. Most of the cases having fractures were of Gustilo II variety (28.2%) and 94.2% of cases were of minor to moderate grades of severity of hand injury on grading by Hand injury severity Score (HISS) Scale (Fig.2).
Emergency departments treat acute traumatic hand injuries that account for 14-27% of unintended trauma. Adult victims mainly between 21-30 years were the primary victims. The workplace is the leading site of injuries where young individuals are at highest risk. The right hand is more vulnerable, especially among right-handed individuals. The dominant hand is usually injured and injury patterns are similar for both hands. Most patients presenting to the emergency room are right-handed, though the right hand is more commonly injured, regardless of handedness.

The predominant male population in this study conforms to most other studies. The young adult is the main victim in this study. Even though most patients in this study were right-handed, the handedness did not influence the injury pattern. Beaton et al. noted that there is no association between dominant hand and the hand injured, and that injuries were more common to the right hand among both right- and left-handed individuals in their study of accidental and non-accidental injuries presenting to an ED. Hollis and Watson also found that the dominant and non-dominant hands are at equal risk without regard to mechanism of injury.

The work place is the site of most injuries; young workers 24 years or younger have the highest risk of occupation hand and finger trauma. The home environment constitutes another major site for injuries, especially in children. Of those aged 1-10 years, 83.3% of injuries occurred at home. Creating a safe home environment will therefore go a long way in reducing the prevalence of injuries in children. Students who had the highest incidence of hand injuries in this study sustained half of their injuries at home while the majority of the other occurred on the road. Drivers sustained most of their injuries in road traffic accidents. This may explain the highest incidence of injuries arising from road traffic injuries as drivers constitute a large proportion of the patients in this study. The grinding machines caused a significantly high number of injuries. Adigun et al. study had raised alarm on the contribution of the grinding machine to the prevalence of severe injuries not only limited to the hand but also to the external genitalia. There is still need to continue effortlessly in the campaign on injuries prevention from grinding machines.

Amputation of the digits is the single most common injury sustained. Even in combination, it is still the injury type sustained by our patients. This may be due to the severity of injuries sustained in road traffic injuries and from the grinding machines, both of which are the two most common causes of injury. That hand injuries caused by mechanical equipments resulted in the most severe of injuries was also noted by Trybus et al. in their article on causes and consequences of hand injuries.

The middle and the ring fingers were the parts of the hand usually injured. Injuries to the little finger were more common than those to the index finger. 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. However fractures only occurred in only 21% of injuries in this study. That this is so is not unconnected with the fact that patients who had amputations were classified differently from those with fractures. 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.

A great limitation of this study is that it is a retrospective 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 and understanding the disability associated with it particularly in the younger age group.
CONCLUSION

The one who have to manage the Hand injuries should be well knowledgeable on the peculiarities of the injuries. Thus it requires a very good surveillance for the one not to miss any of the potential injuries that will adversely affect in the future. The pattern observed in this study resemble to those observed elsewhere. Therefore the practitioners must improve on their understanding of these patterns from time to time in the interest of the patients who deserve nothing less than the best practice and the focus must be made to minimize such injuries.

REFERENCES