A One Year Epidemiological Study of Mechanical Injury Cases brought to SIMS Hospital, Western Uttar Pradesh

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Abstract

Aim: To find out causes and factors responsible for the mechanical injuries. Materials & Methodology: This prospective study was conducted at Saraswathi Institute of Medical Sciences, Hapur, from 1st JULY 2017 to 30th JUNE 2018. There were total 306 patients of mechanical injury cases reported to the department of emergency during the study period. Result: Of the total 306 cases 228 (74.51%) cases were male and 78 (25.49%) cases were female. Most susceptible age group was between 21-30 years (30.1%) of age and RTA were the leading cause of death (83.66%).

Key words: Mechanical injuries, Road Traffic accident, Fall from height, Assault

Introduction

India is passing through a major socio-demographic, epidemiological, technological and media transition. The political, economic and social changes have altered the health scenario. In a developing country like India, infectious diseases were the leading cause of mortality in the past decades, but at present, non communicable diseases and traumatic injuries are on the rise. Globally about 5.8 million people die each year as a result of traumatic injuries. [1] Mechanical injuries are injuries produced by mechanical force-blunt, sharp or firearms. The severity and extent of mechanical injuries depend on amount of force delivered to the body- if the weapon deforms or breaks on impact; some energy is spent in deforming or breaking. Lesser energy is thus delivered to the body, injury is less severe. Legal definition of injury- Any harm, whatever illegally, caused to any person in body, mind, reputation or property. [2] A road traffic accident (RTA) can be defined as “an event that occurs on a way or street open to public traffic; resulting in one or more persons being injured or killed where at least one moving vehicle is involved”. [3] Worldwide, every day about 3400 people die due to road traffic accidents (RTA) and predicted to result in death of around 1.9 million people annually by 2020. [4] Among trauma road traffic accidents are one of the major cause of disability and mortality in younger population and projected to the fifth leading contribution to global burden. [5]

Materials & Method

This study was conducted at Saraswathi Institute of Medical Sciences, Hapur, from 1st JULY 2017 to 30th JUNE 2018. There were total 306 patients of mechanical injury cases reported to the department of emergency during the study period. All Mechanical injury cases including Road traffic accidents, assault and fall from height.

Result

In our study, 306 cases of injuries were reported to the Emergency of Saraswathi Institute of Medical sciences (SIMS) Hapur, out of which 74.51% cases were male and 25.49% cases were female. In age group analysis, maximum number of cases was seen in the age group of 21 – 30 years (30.1%), followed by 11 – 20 years (22.9%). Least number of cases was seen in the age group of 0 – 10 years (3.3%) (Table 1). In the present study, majority of cases (68.30%) were from rural background and remaining 31.70% were from urban background (Table 4). In maximum cases the
place of incidence was road comprising of 88.89% cases and least cases of injuries were found happening at work
place comprising of 1.96% cases (Table 2). In distribution of nature of injuries, simple injuries were seen in 52.61%
of cases and in grievous injuries 47.39% of cases were noted (Table 3). Most of the cases were conscious at the
time of arrival (80.39%) (Table 5). Most common type of injury noted was blunt mixed injury (47.71%) (Table 6).

Table 1: Distribution of subjects according to Age, sex and mode of injury

| Age | Sex | Number of Cases (N=306) | Percentage% |
|-----|-----|------------------------|--------------|
|     | Male | RTA | Fall | Assault | RTA | Fall | Assault |
|    |     |     |      |         |     |      |         |
| 0-10| Male | 5   | 0    | 1       | 1.63 | 0.00 | 0.33    |
|     | Female | 4  | 0    | 0       | 1.31 | 0.00 | 0.00    |
| 11-20| Male | 43  | 3    | 12      | 14.05 | 0.98 | 3.92    |
|      | Female | 11 | 0    | 1       | 3.59 | 0.00 | 0.33    |
| 21-30| Male | 65  | 1    | 11      | 21.24 | 0.33 | 3.59    |
|      | Female | 14 | 1    | 0       | 4.58 | 0.33 | 0.00    |
| 31-40| Male | 34  | 1    | 4       | 11.11 | 0.33 | 1.31    |
|      | Female | 15 | 3    | 2       | 4.90 | 0.98 | 0.65    |
| 41-50| Male | 33  | 0    | 2       | 10.78 | 0.00 | 0.65    |
|      | Female | 7  | 2    | 1       | 2.29 | 0.65 | 0.33    |
| 51-60| Male | 6   | 0    | 2       | 1.96  | 0.00 | 0.65    |
|      | Female | 7  | 1    | 1       | 2.29 | 0.33 | 0.33    |
| >61 | Male | 5   | 0    | 0       | 1.63  | 0.00 | 0.00    |
|      | Female | 7  | 0    | 1       | 2.29 | 0.00 | 0.33    |
| Total |     | 256 | 12   | 38      | 83.66 | 3.92 | 12.42   |

Table 2: Distribution of subjects according to Place of Incidence

| Place   | Number of case (N = 306) | Percentage% |
|---------|-------------------------|--------------|
| Home    | 28                      | 9.15         |
| Workplace | 6                      | 1.96         |
| Road    | 272                     | 88.89        |
| TOTAL   | 306                     | 100          |

Table 3: Distribution of subjects according to nature of injury

| Nature of injury | Number (N=306) | Percentage% |
|------------------|----------------|--------------|
| Simple           | 161            | 52.61        |
| Grievous         | 145            | 47.39        |
| TOTAL            | 306            | 100          |

Table 4: Area wise distribution of cases

| Area   | No. of cases (N= 306) | Percentage% |
|--------|-----------------------|--------------|
| Urban  | 97                    | 31.70        |
| Rural  | 209                   | 68.30        |
| TOTAL  | 306                   | 100          |
Table 5: Distribution of subjects according to Condition of patient

| CNS status    | Number of cases (N = 306) | Percentage% |
|---------------|---------------------------|-------------|
| Conscious     | 246                       | 80.39       |
| Unconscious   | 41                        | 13.40       |
| Semi Conscious| 19                        | 6.21        |
| Total         | 306                       | 100         |

Table 6: Distribution of subjects according to types of injury

| Types of injury        | Number of Cases (N=306) | Percentage% |
|------------------------|-------------------------|-------------|
| Abrasion               | 82                      | 26.79       |
| Bruise                 | 22                      | 7.18        |
| Laceration             | 42                      | 13.72       |
| Incised Wound          | 2                       | 0.65        |
| Fire arm               | 1                       | 0.32        |
| Blunt mixed            | 156                     | 50.98       |
| Blunt and Sharp mixed  | 1                       | 0.32        |
| Total                  | 306                     | 100         |

Discussion

During the study period a total of 306 cases of injuries were reported to the Emergency of Saraswathi Institute of Medical sciences (SIMS) Hapur, out of which 74.51 percent cases were male and 25.49 percent cases were female. In age group analysis, maximum number of cases were seen in the age group of 21 – 30 years (30.1%), followed by 11 – 20 years (22.9%). Least number of cases were seen in the age group of 0 – 10 years (3.3%). Out of 306 cases 83.67 percent cases were of Road traffic accidents, 12.41 percent were cases of Assault and 3.92 percent cases of fall from height. The present study is in agreement with the study of Malik Y et al, where maximum incidence took place on road (51%).

In distribution of nature of injuries, simple injuries were seen in 52.61 percent of cases and in grievous injuries 47.39 percent of cases were noted. In the cases of road traffic accident (n=256), simple injuries were seen in 53.12 percent and grievous injury cases were 46.88 percent. In the assault cases, 57.90 percent of cases had simple injury and grievous injury was seen in 42.10 percent of cases. In this study of fall from height, in majority of cases grievous injury (75%) was seen while Simple injuries were seen in 25.00 percent of the cases. The present study results are consistent with study of Kumar S et al, where majority of cases (62%) suffered from grievous injury. [8]

In the present study, Majority of the patients (80.39%) were Conscious at the time of presenting to emergency. Unconscious was noted in 13.40 percent cases and 6.21 percent cases were in Semi conscious condition. In the cases of Road Traffic Accidents (n=256), blunt mixed injuries were reported in maximum (54.29%) cases, followed by abrasion (26.95%) and laceration in 12.50 percent of cases. In the cases of Assault in this study (n=38), blunt mixed injury (34.21%) was reported in maximum number of cases, followed by abrasion in 26.31 percent of cases. In this study out of total 12 cases of fall from Height (n=12), blunt mixed injury (33.33%) was reported in maximum number of cases, followed by abrasion in 25.00 percent of cases. A study, Chakraborty P N et al, done in road traffic accident cases showed maximum number of injuries were of blunt mixed type (91.83%) followed by lacerations (44.38%) and least were of sharp injuries (4.08%) which is in agreement with the present study. [9] The present study is in disagreement with the study of Jaiswal K et al, done in road traffic accidents, where maximum injuries were laceration (53.46%). [10]

In the present study ‘Road’ (88.89%) was the most common place of incidence for subjects to get injured, followed by ‘Home’ (9.15%) and ‘Work Place’ (1.96%). These results are in consistent with the study of Kishore K et al, where maximum incidence took place on road (51%).

In the present study, Majority of the patients (80.39%) were Conscious at the time of presenting to emergency. Unconscious was noted in 13.40 percent cases and 6.21 percent cases were in Semi conscious condition. In the cases of Road Traffic Accidents (n=256), blunt mixed injuries were reported in maximum (54.29%) cases, followed by abrasion (26.95%) and laceration in 12.50 percent of cases. In the cases of Assault in this study (n=38), blunt mixed injury (34.21%) was reported in maximum number of cases, followed by abrasion in 26.31 percent of cases. In this study out of total 12 cases of fall from Height (n=12), blunt mixed injury (33.33%) was reported in maximum number of cases, followed by abrasion in 25.00 percent of cases. A study, Chakraborty P N et al, done in road traffic accident cases showed maximum number of injuries were of blunt mixed type (91.83%) followed by lacerations (44.38%) and least were of sharp injuries (4.08%) which is in agreement with the present study. [9] The present study is in disagreement with the study of Jaiswal K et al, done in road traffic accidents, where maximum injuries were laceration (53.46%). [10]

Conclusion

This study shows the workload of medico legal cases reporting to the emergency department of this tertiary care hospital. From this study it is clear that Road Traffic accidents are making huge number to the emergency department and hence putting burden on health care system.

Thus recommends:

• Availability of well trained medical and supporting
staff along with well equipped trauma centre round the clock for prompt treatment.

• To post more number of medical and supporting staff on weekends and during evening hours.

• To be well prepared to tackle the large number of cases reporting at the same time.

Apart from above recommendations, incidence of RTA can be decreased by combined efforts from the community, governmental and non-governmental organizations.

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