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Original Research Article

Clinical profile of patients with below knee soft tissue injuries

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ABSTRACT

Background: In the recent era of trauma majority of people suffer from lower limb injuries, which cause functional disabilities and psychosocial consequences. Lower limb injury specially below knee generally involves young and productive people so it is the prime responsibility of the society to prevent such incidents. Our aim is to study clinical profile of various below knee soft tissue injuries to develop better prediction models for defining the most important target for prevention and to reduce morbidities and disabilities.
Methods: The study was conducted in the Department of Surgery, Himalayan Institute of Medical Sciences (HIMS), Swami Ram Nagar, Dehradun, over a period of 12 months. Subjects were recruited from patients presenting in Emergency/Surgery OPD, HIMS, Dehradun with a primary diagnosis of below knee soft tissue injuries. A total of 64 patients were included in the study.
Results: Maximum number of patients were in the age group of 20-40 years (46.88%), and were predominantly males (84.38%). The commonest mode of injury was RTA (75%) primarily involving 2 wheelers (72.91%). Most patients (42.18%) had late presentation to the hospital i.e. after 72 hours of injury which was found to be associated with contamination of wound in 66.6% of patients.
Conclusions: The study emphasizes the need for preventive strategies and protection mechanisms for lower limb injuries. Late presenting contaminated wounds leads to higher complication rates hence there is need for efficient ambulance services for ensuring timely intervention.

Keywords: Contamination, RTA, Soft tissue injuries

INTRODUCTION

Lower limb injuries are common and account for 40-50% of emergency department (ED) visits. These injuries occur frequently in poly-trauma, which remains a leading cause of long hospitalization, disability and death for all ages.[1]

In the recent era of trauma, about one million people get seriously injured annually. Majority of them suffer from lower limb injuries. Lower limb injuries and especially below knee injuries may not be life threatening but they could cause significant functional disabilities with long lasting physical and psychosocial consequences.[2] Lower limb injury generally involves young and productive people, so it is the prime responsibility of the society to prevent such incidents.[3]

The aim of present study is to study clinical profile of various below knee soft tissue injuries which can be used to develop better prediction models to reduce morbidities and disabilities.

METHODS

The study was conducted in the Department of Surgery, Himalayan Institute of Medical Sciences (HIMS), Swami Ram Nagar, Dehradun, over a period of 12 months. Subjects were recruited from patients presenting in Emergency/Surgery OPD, HIMS, Dehradun with a primary diagnosis of below knee soft tissue injuries. A written informed consent was taken from all the patients after obtaining ethical clearance certificate from ethics committee.

Study Design

Type of the study - Cross sectional observational study

Sample size

Sample size was calculated based on convenient sampling, keeping in mind the previous hospital records, 64 patients were included in the study.

Inclusion criteria

- Patients of either sex and all age group
- All patients of below knee soft tissue injuries

Exclusion Criteria

- Patients who refused to consent

Study tools

Structured Study instruments (formats/subject proformas) were developed, and used to generate data.

Interpretation and analysis of the data obtained was carried out after noting all the details in Microsoft Excel sheet. The data thus collected was subjected to descriptive analysis (e.g. mean, frequency, ratio etc.) and was presented in the form of table /charts.

RESULTS

A total of 64 patients with 86 below knee soft tissue injuries were included in the study. They were subjected to detailed history and thorough examination and following results were observed.

Overall mean age of the patients in present study was 31.40±16.85. In this study, out of 64 patients, the highest incidence was in the age group of 20-40 years i.e. 30 (46.88%). The number of cases in the age groups less than 20 years and more than 40 years were same 17 (26.56%). Majority of the patients were males. Male: female ratio in present study was 27:5. Out of 64 patients 54(84.37%) were males while 10(15.62%) were females (Table 1).

Maximum below knee soft tissue injuries occurred due to RTA. This contributed to 75% (48 patients) of overall injuries. Out of the other injuries, 12.5% (8 patients) were domestic and 7.81% (5 patients) were due to burns. While 3.12% (2 patients) were farming related and 1.56% (1 patient) were from animal bite (Figure 1).

Table 1: Age wise and sex wise distribution of subjects (n=64).

Distribution		No. of cases	Percentage
Age	<20	17	26.56%
	20-40	30	46.88%
	>40	17	26.56%
Sex	Male	54	84.375%
	Female	10	15.625%
	Total	64	100%

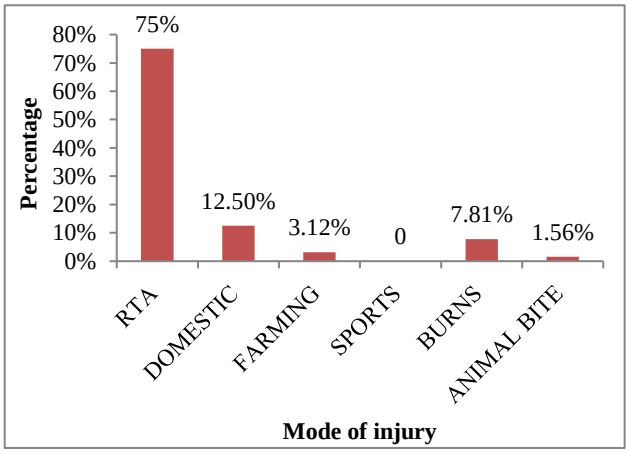

Figure 1: Distribution of patients according to mode of injury (n=64).

It was observed that maximum below knee soft tissue injuries were in patients on 2 wheelers (72.91%), followed by pedestrians (20.83%) and 4 wheelers (6.25%) (Table 2).

Table 2: Distribution of RTA cases according to type of vehicle (n=48).

	No. of patients	Percentage
Pedestrian	10	20.83
2-Wheeler	35	72.91
4-Wheeler	3	6.25
Total	48	100

It was seen that 15 (31.25%) out of 48 RTA patients were found under alcohol intoxication at the time of injury (Figure 2).

Avulsion injuries constituted 39.53%(32 injuries) while wounds with tissue loss were 31.39%(28injuries) followed by abrasion (13.95%) and laceration (12.79%) (Table 3).

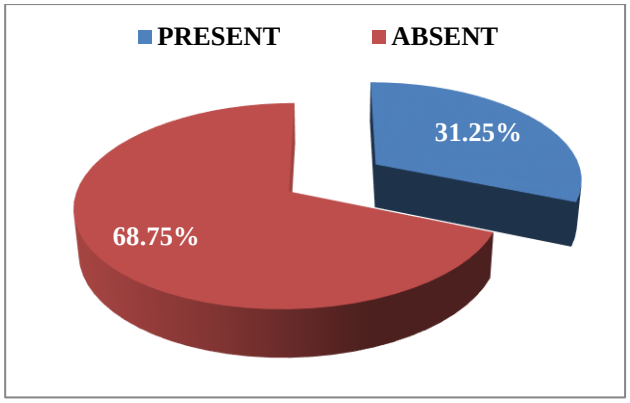

Figure 2: Distribution of patients according to h/o alcohol intoxication at the time of RTA (n=48).

Table 3: Distribution of patients based upon type of wound.

Type of wound	Number	Percentage
Laceration	11	12.79
Avulsion	34	39.53
Wound with tissue loss	29	33.72
Abrasion	12	13.95
Total	86	100

27 patients presented with contaminated wound on clinical evaluation and maximum number of these patients presented after 72 hours (18 patients) while 6 patients presented between 8 to 72 hours and 3 patients in less than 8 hours (Table 4).

Table 4: Distribution of patients with contaminated wound according to time of presentation (n=27).

Time interval between injury and presentation	No. of patients with contaminated wound status	Percentage
<8 hours	3	11.11
8-72 hours	6	22.22
>72 hours	18	66.66
Total	27	100

DISCUSSION

Study on clinical profile of injuries is essential to describe the morbidity, disability as well as defining the most important target for prevention and severity of the injury.

The result of present study shows that injuries occur most commonly i.e. 46.88% in the age group of 20-40 years. These results were in accordance with who did a similar study and concluded that majority of patients in their series were in the range of 21-40 years (38.18%).[3] Similarly it was found that commonest age group involved was 20-39 years (53.5%).[4] It was found that commonest age group involved was 21-30 years (44.67%).[5]

WHO Global Report on Road Safety showed that road traffic injuries were the leading cause of death for young people aged 15-29.[6] This age group is the most active working age group. Since injured individuals are in a productive age, costs are high for both treatment and the loss of productivity.[7]

The study showed that males are more commonly injured than females with a male to female ration of 5.4:1; out of 64 patients 54 (84.37%) were males while 10 (15.62%) were females. Other studies also found similar results. There were 83% male and 17% female victims.[4] 85.8% were male while only 14.2% were female subjects.[8]

High sex ratio found may be attributed to the fact that males are bread earners for family and therefore involved usually in outdoor activities exposing themselves to risk of accidents.

In accordance with the present literature, present study also reported RTA (75%) as the most common cause of injury. In a study, motor vehicle accidents (MVAs) accounted for 82% of the cases.[9] Similarly in study by Mandeep S Dhillon et al road accident was predominant mode of injury occurring in 73.88% cases.[10] One of the probable reasons for such an observation could be the close proximity of our hospital to the national highway.

In India, trauma was estimated as the seventh leading cause of mortality.[11] The World Health Organization (WHO) predicts that by 2020, road traffic injuries will account for nearly 550,000 deaths due to the ongoing, rapid socioeconomic and demographic transition coupled with growing urbanization in India. As part of this new paradigm, Road traffic injuries will hold the fifth position as major killers.[12]

In India, hospitals see a higher rate of road traffic accident related trauma, which is much higher than western world (33% for United Kingdom.[13] and 35 % for United States.[3]

It was observed in present study that maximum injuries were in patients on 2 wheelers (72.91%), followed by pedestrians (20.83%) and 4 wheelers (6.25%). In study it was seen that majority of the RTA patients were on 2 wheelers (37.03%) and pedestrians (37.03%) followed by 4 wheelers (25.92%).[14]

Out of total 48 RTA patients in present study 15 patients (31.25%) were under alcohol intoxication. A study found that 15% of the drivers involved in RTA had consumed alcohol. (64) Similarly, in study it was also observed that 16.33% were under the influence of alcohol at time of accident.[15]

Alcohol impairs decision making, resulting in the inability to perceive hazardous circumstances. A noteworthy number of RTAs in India involve alcohol use as seen in RTA reports in the police and hospital emergency department. Blood alcohol concentration (BAC) of 0.05gm/dl produces 1.83 times greater risk of traffic collision than zero BAC.[16]

Lower limb wounds reach a variable spectrum, and are generally caused by high-energy trauma, with extensive skin loss and impaired tissue viability, associated with amputations of limbs or fingers, lacerations, crushing and exposures of noble tissues.[17] In the present study it was observed that maximum injuries 34 (39.53%) were avulsion while 29 (33.72%) injuries were wound with tissue loss. Abrasion and laceration were 12 (13.95%) and 11 (12.79%) of injuries respectively. These results were contrary to other studies, in a study by Motoki et al, the most commonly sustained injuries were contused lacerated wounds (90%) of the leg with exposure of the underlying structures such as bone or tendon. followed by multiple superficial wounds (10%).[18] Similarly in a study shows lacerations were mostly diagnosed in the lower leg (53.5%).[19] Findings by Koizumi et al also demonstrated that the most common injuries of the lower limb were lacerations followed by contusion and abrasions.[20]

This could be because ours is a tertiary centre and most of the simple injuries like abrasions, contusions are managed at primary centres and complicated cases are referred.

In these 64 cases, 42.18% (27 cases) were found to have contamination on clinical evaluation whereas 37 cases (57.81%) were clean. In a study, wound contamination was reported in 20% of the cases.[21] In present study contamination of wound is found to be directly related to the delayed time of presentation as of the 27 patients with contaminated wounds 18 patients (66.6%) presented after 72 hours. Cleaner wounds had better wound healing and lesser potential for infection. In present study 17 patients had post op complications of which 12 were found to have contaminated wounds at the time of admission.

CONCLUSION

Lower limb injuries are common and account for 40-50% of emergency department visits with maximum number of patients in the age group 20-40 years which is the most productive age causing loss to family and the society. This study helped us in identifying that road side accidents, primarily consisting of two wheelers are the most common cause of below knee soft tissue injuries and there is a need for planning preventive strategies such as the development of protection mechanisms for lower limbs, stimulating the enforcement regarding the compliance of traffic laws, in an attempt to reduce the numbers of motorcycle accidents and redirect public investments in health.

Delayed presentation of these injuries leads to contamination of wounds which ultimately leads to higher complication rates hence there is need for prompt and adequate ambulance services for the victims with the help of government and other voluntary agencies, so that timely intervention can be planned in such injuries.

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