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Short Communication

Analysis of Blunt Chest Trauma Cases Requiring Admission in a Tertiary Care Level Hospital of Nepal

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ABSTRACT

Background: Chest trauma is second most common cause of trauma deaths and has wide spectrum of illness. Although conservative treatment suffices in most patients, some requires chest tube drainage to mechanical ventilation.
Objective: To know about various modes of injuries, various symptoms at presentation and spectrum of treatment required
Method: A prospective study was carried out at Dhulikhel Hospital, including all the cases of blunt chest trauma that were admitted in surgical department between September 2012 - August 2014. Parameters that were studied were mode of injury, time taken to reach health center, symptoms at presentation, involvement of chest area, presence and sites of rib fracture (if any), spectrum of treatment required and hospital admission days.
Results: Of the 85 patients admitted with blunt chest trauma, 80% were male and 20% were female. Most common age group was 20-40 years. Regarding symptoms, 92.4% presented with chest pain, 87.9% with cough and 83.3% with shortness of breath. Primary side of injury was left side in 62.1%. In 75.8% primary site of injury was anterior and most common region of injury corresponds to 3-6 ribs. Fall from height especially fall from tree is the most common mode of injury which was present in 68.2% of cases. In 92.4 % of cases rib fracture was present. In 19.7% pulmonary contusion was present. Percentage of cases where there was pneumothorax was 22.7%. In 19.7% cases there was hemothorax. In 25.9% cases, chest tube drainage was required. Mean hospital admission days was 3.5 days which increased to 6 days in patients requiring chest tube drainage.
Conclusion: Blunt chest trauma, although managed conservatively in most of the cases, also needs hospital admission and observation and if indicated requires chest tube drainage, IV antibiotics and steroids.

Key words: Blunt chest trauma, chest tube drainage, hemothorax, pneumothorax, rib fracture

INTRODUCTION

Thoracic trauma has wide spectrum of illnesses ranging from abrasion to life threatening contusion or visceral injuries. [1] Following head and spinal cord injuries, chest injury is the second most common cause of trauma deaths. [2] Thoracic trauma accounts for about 10-15% of the entire

trauma. [3] Although most chest injuries can be managed conservatively with adequate pain control, supportive care, some however needs chest tube insertion, and some even require mechanical ventilation. Although motor vehicle accident is major cause of blunt chest injury in most of the developed world, this scenario is completely different in country like Nepal. [4] To know about various modes of injuries, various symptoms at presentation and spectrum of treatment required this study was performed.

MATERIALS AND METHODS

A prospective study was carried out at Dhulikhel Hospital, a University hospital at rural Nepal including all the cases of blunt chest trauma that were admitted in Surgical department between September 2012 - August 2014. Various parameters that were studied were mode of injury, time taken to reach health center, symptoms at presentation, involvement of chest area, presence and sites of rib fracture (if any), spectrum of treatment required and hospital admission days. The patients were excluded if there were other significant injuries besides chest trauma affecting hospital admission and other management. Written informed consent was taken from the patients and the study has received approval from institutional review committee. The data was collected in Microsoft office access and statistical analysis was done in SPSS 16.0. The scalar variables were expressed in mean, standard deviation and range. The nominal variables were categorized based on the dependent factor and expressed in percentages.

RESULTS

There were eighty five patients admitted with blunt chest trauma of which 68 (80%) were male and 17(20%) were female. Most common age group was 20-40 followed by 40-60 years as shown in figure 1. Mean age is 47.85 years (SD=16.96 years, Range 11-90 years). Mean duration days taken for patients to reach hospital is 2.56 days (SD 3.76 days, Range 1-30 days).

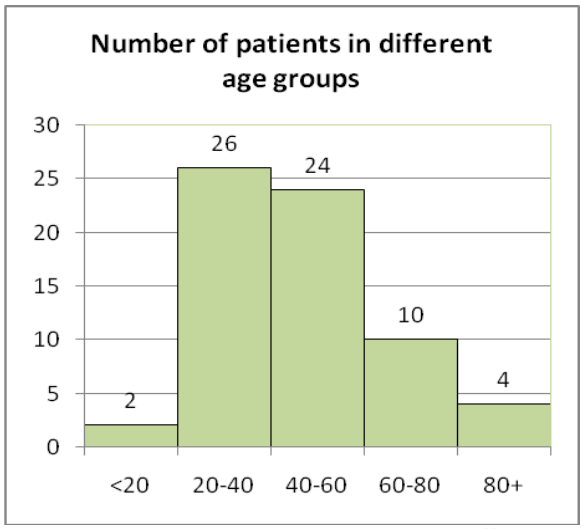

Figure 1: Histogram showing patient numbers in different age groups.

As shown in table 1, Chest pain was the most common presenting symptom which was present in 92.4% of cases which was followed by cough (87.9%) and shortness of breath (83.3%). Hemoptysis was present in only 9.1% of cases.

Table 1: Table showing presenting symptoms:

Complaints	Present (%)
Chest pain	92.4
Cough	87.9
Shortness of breath	83.3
Hemoptysis	9.1

As shown in table 2, injury to left side (62.1%) was more common than to right side (37.9%) The trauma was primarily inflicted on anterior part of chest (75.8%). The part of chest corresponding to 3-6 ribs had maximum injury (75.8%). Regarding mode of injury, fall from height was most often cause (68.2%) followed by road traffic accident (15.2%).

Table 2: Table showing side, site, region and mode of injury

Headings	Sub groups	Percentages
Side (Primary side of injury)	Right	37.9
	Left	62.1
Site (Primary site of injury)	Anterior	75.8
	Posterior	24.2
Region (Primary region of injury)	Upper(Corresponding to first two ribs)	4.5
	Middle (Corresponding to 3-6 ribs)	75.8
	Lower (Corresponding to 6-12 ribs)	19.7
Mode of injury	Fall from height	68.2
	Road traffic accident	15.2
	Accidentally hit by objects	12.1
	Physical assault	4.5

Table 3: Showing associated rib fracture, pulmonary contusion, pneumothorax, hemothorax and surgical emphysema.

Parameters	Percentage
Rib fracture	92.4
Pulmonary contusion	19.7
Pneumothorax	22.7
Hemothorax	19.7
Surgical emphysema	19.7

In 92.4 percentages of cases, rib fracture was present. In 19.7 percentages, pulmonary contusion was present. Percentage of cases where there was pneumothorax was 22.7%. In 19.7% cases there was hemothorax. Also, 19.7% cases had surgical emphysema. Flail chest (Lateral flail) was present in two cases (2.4%).

Table 4: Table showing requirement of different medications or treatment modalities

Parameters	Percentage
IV or Oral analgesics	100
Antibiotics	29.4
Steroids	21.2
Epidural analgesics	3.5
Chest tube insertion	25.9

Table 4 shows that all the cases required IV or Oral analgesics. Only 3% cases required epidural analgesics. Also 29.4% required antibiotics, 21.2 % required steroids and 25.9% required chest tube insertion. Of the cases requiring chest tube insertion, 63.3% were due to pneumothorax, 27.2% due to hemothorax and 9.5% due to both hemopneumothorax.

Mean hospital admission days was 3.5 days (minimum=1 days, maximum=40 days, S.D.=1.97). Of the cases in which chest tube was placed, mean duration of chest tube insertion was 3.52 (minimum=2, maximum=18, S.D.=1.32) and mean admission days was 6 days (minimum=3days, maximum=40days, S.D. 3.41). Of all the cases, 97.6% improved while one case (1.2%) left against medical advice and one case (1.2%) had to be referred.

DISCUSSION

This study shows that chest trauma is more common in males compared to female. In a study by Ibrahim Al-Koudmani, male to female ratio was 6.7:1. [4] This finding has been found even in children. In a study at Egypt, male to female ratio of chest trauma in children is 3.81:1. [6] Chest trauma is more common in age group 20-40 as this group has more activity, more travel and more risk taking behavior. [7] Although fall from height is found as most common cause of chest trauma in our setting, in many other studies, road traffic accident is the most common cause of chest trauma. [5,8] In our study chest trauma is found to be more common in left side and anterior side. This can be because, patients who are more commonly right handed have tendency to decrease the impact on right side by use of right hand, there by sustaining injury on left side. In chest trauma, besides rib fracture, pneumothorax, hemothorax, surgical emphysema and contusion are common complications which may arise. [4] In study by Ibrahim Al-Koudman, pneumothorax

was found in 51% cases, hemothorax in 38% slightly higher compared to our study. [4] In study by R. Demirhan however, these percentages are 28.8% and 24.1% respectively, much similar to our result. [3] Chest tube insertion was required in 28.2% of all the blunt chest trauma cases in the same study which is very similar to our study (25.9%). [3]

CONCLUSION

Blunt chest trauma, although managed conservatively in most of the cases, also needs hospital admission and observation and if indicated requires chest tube drainage, IV antibiotics and steroids. Fall injury especially fall from tree being the main cause for blunt chest trauma in rural Nepal warrants for adequate health education and preventive measures.

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