



ISSN: 2395-1958
IJOS 2019; 5(1): 404-406
© 2019 IJOS
www.orthopaper.com
Received: 01-11-2018
Accepted: 05-12-2018

Dr. Shri Kant Gupta
Associate professor, Department
of Orthopaedics, Hind Institute
of Medical Sciences Ataria
Sitapur, Uttar Pradesh, India

Analysis of 256 cases of rib fractures and associated complications

Dr. Shri Kant Gupta

DOI: <https://doi.org/10.22271/ortho.2019.v5.i1h.71>

Abstract

Background: The leading cause of rib fractures are due to blunt thoracic trauma. The present study was conducted to assess the cases of rib fractures in patients.

Materials & Methods: The present study was conducted on 256 road traffic accidents and confirmed cases of rib fractures of both genders. The reason of rib fractures was also recorded. In all history, a thorough clinical examination and chest radiographs were done. (ECG) and complete blood count (CBC) was also performed.

Results: Out of 256 cases, males were 180 and females were 76. Common reason for rib fractures was road side accidents in 176, domestic violence in 40, fall in 30 and assault in 10. The difference was significant ($P < 0.05$). Common complications were pneumothorax in 37, hemothorax in 12, pneumothorax- Hemothorax in 5, lung contusion in 11 and flail chest in 22 cases. The difference was significant ($P < 0.05$).

Conclusion: The common cause of rib fracture was road side accidents. The most common complication was pneumothorax.

Keywords: hemothorax, pneumothorax, Rib

Introduction

Nowadays number of road side accidents is increasing day by day. The major reason behind this is heavy traffic, increase in population, fast western life and failure to follow road safety rules. It has been observed that in trauma-associated deaths, about 20%- 25% are due to thoracic traumas. Thoracic trauma is the third most common trauma-associated cause of death and it comes after traumas of the head and extremities ^[1].

The leading cause of rib fractures are due to blunt thoracic trauma. Seventy to seventy five thoracic trauma are blunt trauma. Road side accident leads to major injury of true as well as false ribs. Rib number 4th to 9th are among commonly injured ribs. Injury to 1st and 2nd ribs causes injury of big vessels in the vicinity ^[2].

Blunt chest trauma can lead to pneumothorax. It is considered as serious consequences of Blunt chest trauma. Hence the assessment becomes crucial to prevent further complication and mortality ^[3]. The fractures of ribs are mostly encountered in the elderly. The rib fractures are often unnoticed and underestimated, especially in the presence of co-existing pathologies, which may result in increased morbidity and mortality. Radiographic assessment of rib fractures is important in case of any road side accident. Antero- posterior and lateral chest radiographs along with CT scan are useful in detection of clinically undiagnosed rib fractures ^[4]. The present study was conducted to assess the cases of rib fractures in patients visiting the Orthopaedic department.

Materials & Methods

The present study was conducted in the department of Orthopaedics. It comprised of 256 road traffic accidents and confirmed cases of rib fractures of both genders. The diagnosis of rib fractures were done clinically and radiographically. The study protocol was approved from the institutional ethical committee. All patients were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was recorded. The reason of rib fractures

Correspondence

Dr. Shri Kant Gupta
Associate professor, Department
of Orthopaedics, Hind Institute
of Medical Sciences Ataria
Sitapur, Uttar Pradesh, India

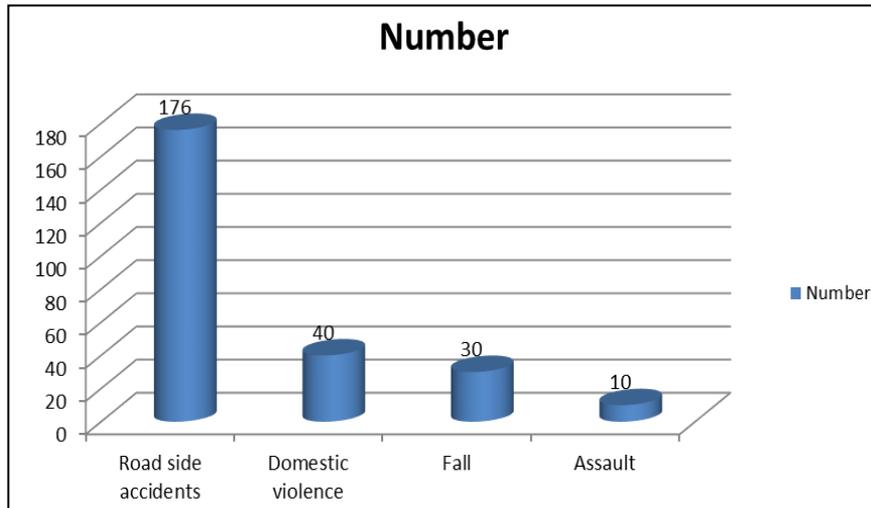
was also recorded. In all history, a thorough clinical examination and chest radiographs were done. Depending upon the condition, patients were managed either in ward or ICU. All vital signs such as pulse, blood pressure, respiratory rate and temperature was monitored. Electrocardiography (ECG) and complete blood count (CBC) was also performed. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I: Distribution of patients

Total- 256		
Gender	Males	Females
Number	180	70

Table I shows that out of 256 cases, males were 180 and females were 76.



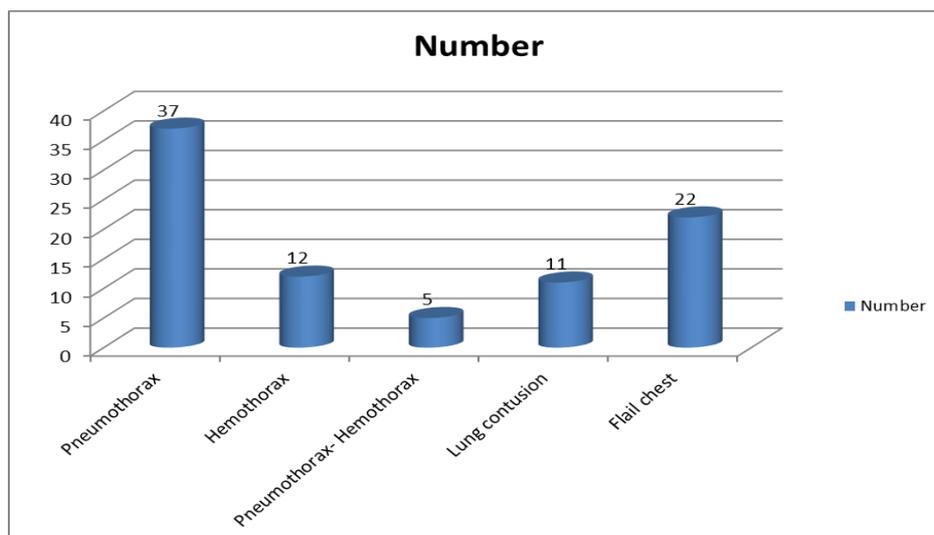
Graph I: Reason for rib fractures

Graph I shows that common reason for rib fractures was road side accidents in 176, domestic violence in 40, fall in 30 and assault in 10. The difference was significant (P< 0.05).

Table II: Associated complications of rib fractures

Complications	Number	P value
Pneumothorax	37	0.05
Hemothorax	12	
Pneumothorax- Hemothorax	5	
Lung contusion	11	
Flail chest	22	

Table II, graph II shows that common complications were pneumothorax in 37, hemothorax in 12, pneumothorax- hemothorax in 5, lung contusion in 11 and flail chest in 22 cases. The difference was significant (P< 0.05).



Graph II: Associated complications of rib fractures

Discussion

The number of road side accidents is on rise. It is seen not only in adults but in youngsters too. The high speed of

vehicles, lack of traffic rules, domestic violence, fall and physical assault are amongst few reasons behind this. The treatment and follow-up of rib fractures are critical due to its

high incidence and serious complications associated with it. Children's ribs are more flexible in nature compared to the adults.⁵ Hence the consequences of a thoracic trauma may be different in children than in adults. A simple trauma in children can cause injury to the intra-thoracic viscera. It has been observed that rib fractures in children found that the mortality rate in children with multiple rib fractures was 20 times higher than those who do not have a fractured rib.¹⁶ The present study was conducted to assess the cases of rib fractures in patients visiting the Orthopaedic department.

We found that out of 256 cases, males were 180 and females were 76. Wilson *et al.*¹⁷ in their study found that the etiology of the trauma in road traffic accidents in 330 cases, falls in 122, assault in 54, and industrial accidents in 42 cases. Author found pulmonary complications such as pneumothorax in 37.2%, hemothorax in 26.8%, hemo-pneumothorax in 15.3%, pulmonary contusion in 17.2%, flail chest in 5.8% and isolated subcutaneous emphysema in 2.2% were noted. 40.1% of the cases with rib fracture were treated in intensive care units.

Poole *et al.*¹⁸ in their study on 512 rib fracture cases observed that 72% were due to road side accidents. The mean duration of their stay in the ICU was 11.2 days. 42.8% of the cases were treated in the wards whereby their mean duration of hospital stay was 4.1 days, while 17.1% of the cases were followed up in the outpatient clinic. Twenty-two patients required surgery. Mortality rate was calculated as 5.2%

In present study, common reason for rib fractures was road side accidents in 176, domestic violence in 40, fall in 30 and assault in 10. Nakayama *et al.*¹⁹ conducted a study in which - group 1 patients with up to two fractured ribs were 72 patients (33.9%) and group 2- with three or more fractured ribs were 140 patients (66.1%). The number of associated chest injuries was significantly higher in the second group- in 133 patients (95%). The mortality rate was 16.9%.

We found that common complications were pneumothorax in 37, hemothorax in 12, pneumothorax- Hemothorax in 5, lung contusion in 11 and flail chest in 22 cases. Ziegler *et al.*¹⁰ reported that pulmonary complications due to rib fractures include pneumothorax, hemothorax, pulmonary contusion, flail chest, pneumonia and atelectasis. Author found that there was not a significant difference between the pulmonary complication and the increased number of the fractured ribs. They calculated the complication rates as 31, 38, 41.7 and 38% for 1-2 fractures, 3-4fractures, 5-6 fractures and 7 or more fractures, respectively.

Ahmed Z *et al.*¹¹ conducted a study in which 144 males were seen with rib fractures. The mean age was 36.07±15.77 years. The primary cause of trauma was a motor vehicle accident, seen in 37.0% patients. Bilateral rib fractures were detected in 41.4% patients. Hemothorax was complication with pneumothorax in 22.6% patients bilaterally. The laterality of the rib fracture and hemothorax demonstrated a significant difference in the patient group over 60 years of age. Co-existing bilateral thoracic injuries were detected more often in this group.

Conclusion

The common cause of rib fracture was road side accidents. The most common complication was pneumothorax.

References

1. Harris GJ, Soper RT. Pediatric first rib fractures. J Trauma. 1990; 30:343-5.
2. Bulger EM, Arneson MA, Mock CN, Jurkovich GJ. Rib

fractures in elderly. J Trauma. 2000; 48:1040-6.

3. Baker SP, O'Neill B, Haddon Jr W, Long WB. The injury severity score: a method for describing patients with multiple injuries and evaluating emergency care. J Trauma. 1974; 14:187-96.
4. Garcia VF, Gotschall CS, Eichelberger MR, Bowman LM. Rib fractures in children: a marker of severe trauma. J Trauma. 1990; 30:695-700.
5. Segers P, Van Schil P, Jorens P, Van Den Brande F. Thoracic trauma: An analysis of 187 patients. Acta Chir Belg. 2001; 101:277-82.
6. Ceran S, Sunam GS, Aribas OK, Gormus N, Solak H. Chest trauma in children. Eur J Cardiothorac Surg. 2002; 21:57-9.
7. Wilson RF, Murray C, Antonenko DR. Non penetrating thoracic injuries. Surg Clin North Am. 1977; 57:17-36.
8. Poole GV, Myers RT. Morbidity and mortality rates in major trauma to the upper chest. Ann Surg. 1981; 193:70-5.
9. Nakayama DK, Ramenofsky ML, Rowe MI. Chest injuries in Adults. Ann Surg 1989; 210:770-5.
10. Ziegler DW, Agarwal NN. The morbidity and mortality of rib fractures. J Trauma 1994; 37:975-9.
11. Ahmed Z, Mohyuddin Z. Management of flail chest injury: internal fixation versus endotracheal intubation and ventilation. J Thorac Cardiovasc Surg 1995; 110:1676-80.