

TO EVALUATE THE SOURCES OF BLUNT CHEST TRAUMA AND FREQUENCY OF CHEST COMPLICATIONS IN TRAUMATIC PATIENTS AT TERTIARY CARE HOSPITAL.

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ABSTRACT

INTRODUCTION: Physical Trauma is the tragic and multifaceted injuries that could be life threatening. It is the 3rd most common cause of mortality in the globe. Most incidences is seen in first 4 decades of life throughout world. Blunt chest trauma is commonly caused by moving vehicles physical assault and falling from height also. Nowadays, world is facing this serious problem and is continuously increasing yearly in every country. Thoracic trauma occurs in 60% of polytrauma patients and has 20-25% mortality rate. **OBJECTIVE OF STUDY:** To determine the sources of Blunt trauma and the frequency if multiple injuries as a result of blunt trauma. **STUDY DESIGN:** Cross sectional study. **PLACE AND DURATION OF STUDY:** AT Surgical Unit-II PMC Hospital Nawabshah. Duration was from October 2019 to September 2020. **PATIENTS AND METHODS:** All the patients were admitted with diagnosis of Blunt chest trauma from Trauma center PMC Hospital Nawabshah.. They were examined by applying ATLS and managed accordingly. Auscultation was done. Radiological investigations and biochemical workup was done. Focussed Assessment with Sonography in Trauma (FAST) was done immediately. The treatment was decided accordingly. **RESULTS:** Blunt trauma is caused by many sources. In our study, 44 (57%) patients got blunt injuries due to road traffic accident by bike, 20 (29%) by car, 8(10%) by fall from height and only 5(7%) by collapse of wall. Blunt chest trauma can injure many organs but the most vulnerable are lungs. Simple pneumothorax was seen among 34 (44.1%) patients and tension Pneumothorax in 5 (6.4%). Hemothorax was seen in 12 (15.5%) , surgical emphysema in 20(25.9%) and flail chest was noted in 6 (7.7%) patients. **CONCLUSION:** It is concluded that sources of blunt trauma commonly are moving vehicles both two wheeler or four wheeler and the complication commonly developed are pneumothorax and surgical emphysema.

KEYWORDS: Blunt Trauma, Penumothorax, Hemothorax, Flail Chest, FAST.

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INTRODUCTION

Physical traumas are tragic and multifaceted injuries that could be life threatening. Astonishingly, it is the third most common causes of death in all age groups after cardiovascular diseases and neoplastic lesions. It is the most common cause of death in patients of first four decades of their lives. Though, trauma can injure any part of the body but one out of four persons dies owing to complications of thoracic trauma.¹ The causes of blunt chest trauma are motor vehicle accident, falling from height, physical assault, blunt instrument injury and fall of wall on a person. Chest trauma due is serious problem being faced by the globe in today's modern era as a result of high speed vehicle. Thoracic trauma occurs in 60% of polytrauma patients and has 20-25% mortality rate.^{2,3}

Trauma is divided into two types viz penetrating and blunt. Penetrating injuries are caused by cutting and gunshot causalities disrupting the integrity of tissues. Blunt injuries damage organs but does not disrupt the integrity of tissues and damage organs under the tissues. Among blunt injuries, multiple injuries can occur ranging from rib fracture to flail chest, pneumothorax to hemothorax and pulmonary contusion to trachea-bronchial injuries. These injuries can present from mild to severe symptoms. They can present with chest pain simple dyspnea and even respiratory arrest.⁴ Therefore it is imperative to understand the treatment logic and adopt multidisciplinary approach to manage these conditions because only

10% patients need surgical intervention and 90% are treated conservatively by appropriate airway, oxygen support, intravenous fluid therapy, maneuvers and tube thoracostomy. To manage pain in traumatic patients is the significant step and basic treatment. Morbidity and mortality can be enormously reduced by proper diagnosis and simple management.^{5,6}

The mechanisms of blunt injuries include fall from height, traffic accidents and occupational accidents. More than 70% chest injuries are due to blunt trauma. Moreover, chest blunt trauma accounts for 15% of all traumas in the globe.⁷ While assessing the blunt trauma in emergency centers, 6 life threatening conditions should be immediately investigated and treated. These are airway obstruction, tension pneumothorax, massive hemothorax, flail chest and pericardial tamponade. Similarly, potentially life threatening conditions such as pulmonary contusion, tracheobronchial injuries, diaphragmatic injuries, thoracic aortic disruption, myocardial injury and esophageal injury. Two of these six injuries occur as result of trauma. Any trauma can cause multi organ injuries so multidisciplinary approach should be applied to exclude injuries of other organs.⁸ 10% or less than this of blunt chest trauma is treated surgically and the rest of patients can be treated conservatively by appropriate airway assessment, volume resuscitation, pulmonary toilet, oxygen support, tube thoracostomy and adequate pain control.^{9,10}

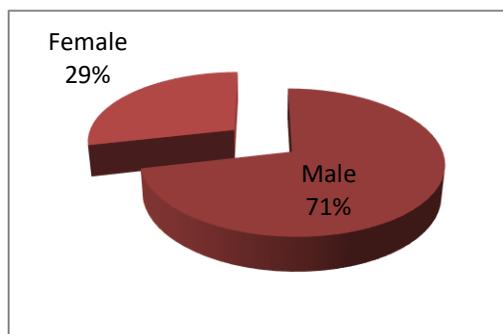
The rationale of our study is to determine the sources of blunt and find out the frequency of complications of chest injuries so that patients be made aware of the vehicle trauma through social media and decrease the incidents in future.

MATERIAL AND METHODS

This is a cross sectional study done at surgical Unit II PMC Hospital Nawabshah. The duration of study was one year from October 2019 to September 2020. Ethical committee approval was also taken All the patients were admitted from Trauma center PMC Hospital Nawabshah. All patients had history of Blunt Chest Trauma. They were examined by applying ATLS. Auscultation was done. A wide bore cannula of no !8 was used to give intravenous fluids in order to restore the volume loss of patients. Blood was arranged and transfused as per requirement. X Ray chest was done to find out any rib fracture. Focussed Assessment with Sonography in Trauma (FAST) was done immediately. Emergency Computed Tomography (CT Scan) was done in some patients to confirm our diagnosis. The treatment was decided according to grade of trauma and physical status of the patients. Conservative treatment was done in some patients and in some patients, chest tube insertion was done and patients were monitored in the ward accordingly and discharged after 3 to 10 days and called for follow up upto 3 months. Conclusions were drawn and kept in record.

RESULTS

Both genders suffered blunt trauma due to different sources. Only 55 (71%) Male and 22 (29%) female patients were included in this study.



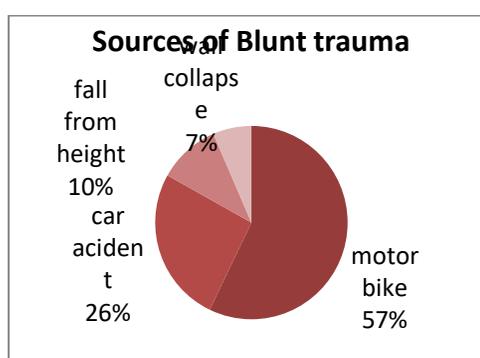
Age difference was also noted among patients. 30 (38.9%) patients were aged between 14-21 years where as 23 (29.8%) are of age between 22-31 years. 14(18.8%) patient's age was of 32-45 and only 10(12.9%) were up to 60 years.

TABLE NO 1: AGE DISTRIBUTION OF PATIENTS

S NO	AGE IN YEARS	NO OF PATIENTS	PERCENT AGE
	14-21	30	38.9%
2	22-31	23	29.8%
3	32-45	14	18.8%
4	46-60	10	12.9%
TOTAL	14-60	77	100%

SOURCE/CAUSE OF BLUNT TRAUMA

Blunt trauma is caused by many sources. In our study, 44 (57%) patients got blunt injuries due to road traffic accident by bike, 20 (29%) by car, 8(10%) by fall from height and only 5(7%) by collapse of wall.



Blunt chest trauma can injure many organs but the most vulnerable are lungs. Simple pneumothorax was seen among 34 (44.1%) patients and tension Pneumothorax in 5 (6.4%). Hemothorax was seen in 12 (15.5%) , surgical emphysema in 20(25.9%) and flail chest was noted in 6 (7.7%) patients.

TABLE NO 2: COMPLICATIONS OF BLUNT TRAUMA IN CHEST

S NO	COMPLICATIONS	NO OF PATIENTS	PERCENTAGE
	Simple Pneumothorax	34	44.1%
	Tension pneumothorax	5	6.4%
	Hemothorax	12	15.5%
	Surgical emphysema	20	25.9%
	Flail chest	6	7.7%

DISCUSSION

Blunt chest injuries are the most significant problem in every society because of increasing incidents of vehicle accidents. The chest wall is the most common region to be affected. Of all trauma admissions, 30.9% patients suffer chest injuries. Most of the common injuries are only bony and can be treated without hospitalization. Injuries to thoracic cage can cause be life threatening if not treated early and properly. Triage is used to assess the accurate identification of the risk of the patient.¹¹ In a study of Chest trauma presented to JPNATC, there was male predominance with ratio male and female 8:1. In our study, males injured were 71% and females 29%. In another study, patients age was 3 years to 86 years and majority of patients were in age group of 18-65 years (86%). But in our study, young adults were common victims. Their age was 14-21 years with prevalence of 38.9%. In a study, the common mode of injury was Road Traffic Accidents and it was 59.7% of all injuries.¹² 35% cases were related to motor cycle accidents, 30% had four wheeler crashes, 5% had bicycle injuries and 30% patients were pedestrians hit by Moving vehicle. In our study, motor bike accidents were 57%, four wheeler traumas were 26% and 10% patients suffered injuries due to fall of wall or heavy object over the body.^{13,14} Pneumothorax can affect the patients by alveolar rupture, paperbag effect, acceleration deceleration injury and rib fractures. In tension pneumothorax, air enters the pleural space at each inspiration and there no escape of air from pleural space. In a study done in Israel, spontaneous pneumothorax occurred in 33.6% patients due to trauma. In another study, 12% of patients without symptoms had a delayed pneumothorax or hemothorax.¹⁵ In our study, simple pneumothorax was noted in 44.1% traumatic patients where as tension pneumothorax was seen in 6.4% of patients. In a study, subcutaneous emphysema was recorded in 40% patients but in our study, the patients developed surgical emphysema was 25.9%. In a study, 51% patients suffered chest trauma and developed hemothorax. In another study, incidence of delayed hemothorax in first weeks was 7.3% to 12%. In our study, Hemothorax was reported to be among 15.5% patients only.¹⁶

CONCLUSION:

It is concluded that sources of blunt trauma commonly are moving vehicles both two wheeler or four wheeler and the complication commonly developed are pneumothorax and surgical emphysema.

DATA AVAILABILITY: data will be available on request

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

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