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Study On Surgical Management of Penetrating Thoraco Abdominal Injuries

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I. INTRODUCTION

Thoraco Abdominal Injuries may occur due to closed trauma or Penetrating wound of the chest Penetrating Injuries are caused by missile or weapon traversing diaphragm. Penetrating wounds to the thoraco abdominal regions may injure both intrathoracic and intraabdominal structure as well as diaphragm. Delayed diagnosis of diaphragm injury can be associated with significant morbidity and mortality. There may be no abdominal sign in injuries of diaphragm particulariy injuries confined to the lesser sac or without visceral injuries. If there is wound over the lower half of the chest - from nipple level anteriorly and scapular tips posteriorly to the costal margins inferiorly are considered to have caused a diaphragmatic injury until proven otherwise. Negative radiological findings do not exclude a diaphragmatic injury. The thoracic component of Penetrating thoracoabdominal injury can usually be treated conservatively but laparotomy is advised for repair of abdominal viscera. There is greater chance of plural infection in associated abdominal injury due to contamination by intestinal content. So, timely identification reduces the risk of morbidity and mortility associated with diaphragm injuries.

II. MATERIAL AND METHODS

Twenty five cases of Penetrating thoraco abdominal injuries reviewed in a series of sixty cases of Penetrating chest wound during jan'2005 to March'2018 in surgical emergency of NMCH, Patna.

III. OBSERVATION

At the time of study, Management of 25 cases of thoracoabdominal injuries admitted in surgical emergency of NMCH, Patna including cause, age, sex, clinical manifestation and diagnosis was done.

TABLE –I
Incidence of diaphragmatic penetration in the different types of chest wound
The incidence of diaphragmatic injury in the different types of penetrating chest wou indicated in table no.-1

TABLE -II
Distribution and incidence of thoracoabdominal injuries in relation to the site of entry wound.

SITE OF ENTRY WOUND	NO.OF CASES	NO. OF THORACOABDOMINAL INJURIES
Neck	4	1
Left upper chest	15	4
Left lower chest	30	16
Right upper chest	5	2
Right lower chest	6	2

Table II shows the distribution of the entry wound in thoracoabdominal injuries and there relation to the each quardrant of the chest in the series.

TABLE-III
Sex- Incidece

SEX	NO. OF CASES	PERCENTAGE (%)
Male	54	90
Female	06	10

The age of 25 cases range from 16 to 55.

IV. DIAGNOSIS

A high index of suspicion in the presence of a wound over lower half of chest is necessary to rule the lesion. The diagnosis of diagphragmatic penetration was cleared in 2 cases where the omentum protruded through the chest wound. Sign of peritoneal irritation were presenting 16 cases, abdominal sign of diagphragmatic penetration absent in 9 cases, in 4 of these the diagphragmatic puncture was unaccompanied by any visceral injury, in another 3 cases the visceral injuries were confined to lesser sac.

In 2 cases, high velocity missile wound of the right hemidiaphragm and right lobe of liver, hepatic bleeding had occurred into the right pleural cavity.

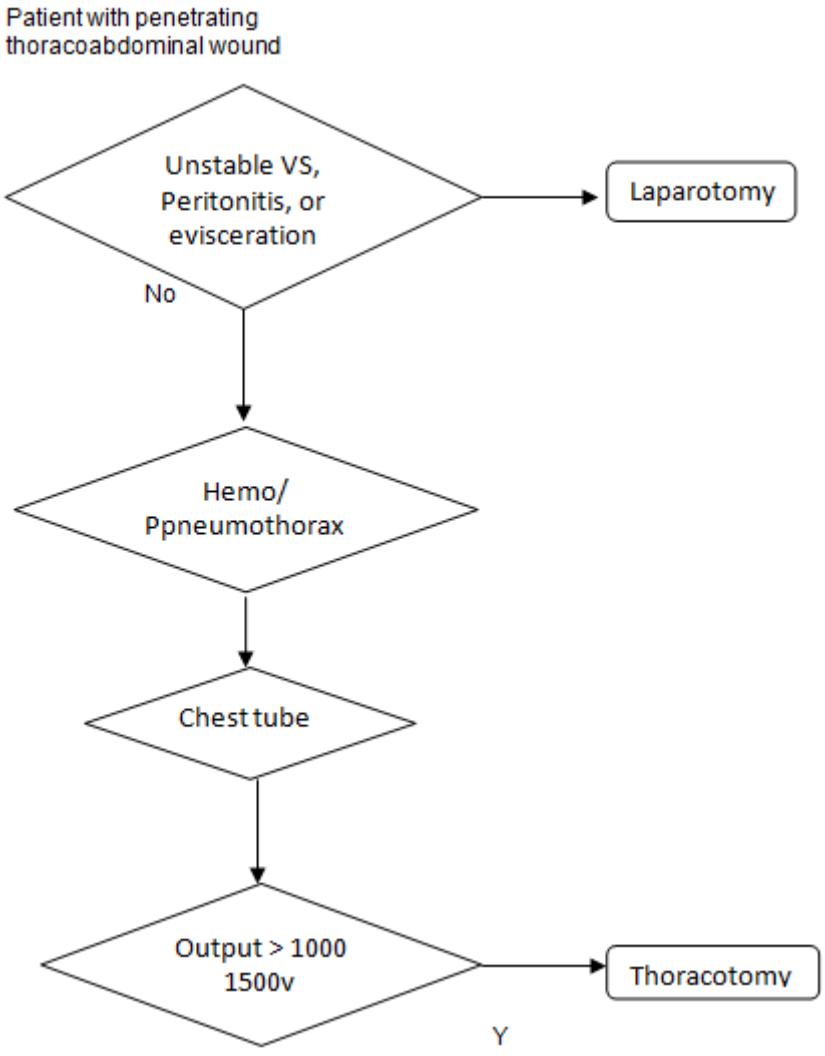
Peristaltic song was absent only in those cases where there was contamination of general peritoneal cavity by the gastro – interestinal contents

Local wound exploration not performed to avoid further injury. Chest x-ray should always be obtained promptly. The CXR demonstrated anyone or more of the following abnorma lities - pneumothorax, haemothorax, haemo-pneumothorax, pneumoperitoneum, visceral herniation into left phorex.

Abdominal radiological examination revealed a diaphragmatic hernation in one case and free air below the diaphragm in another case. Retained missiles were located by radiological examination. Other tools was abdominal paracentesis, sonology CTscan etc.

TREATMENT

Before giving any treatment blood sample sent for complete routine blood examination. A general protocol followed for thoracoabdorntnal wound.



A haemothorax or haemopneumothorex present in 16 cases. No significant intrathoracic pathology found in 6 cases, there was one case each of pneumothorax, cardiac wound and diaphragmatic hernia

Immediate thoracotomy performed in 5 cases but in only one for repair ofthe cardiac wound. The abdominal injuries in this case dealt through a separate abdominal incision. Thoracotomy was performed in the other 4

cases to repair the diaphragmatic and abdominal injuries. The intrathoracic lesions in other case were dealt by intercostal tube drainage. Empyema occurred in 4 cases due to infections.

TABLE -IV

Incidence of abdominal visceral injuries in 25 thoracoabdominal wounds

INJURED ORGAN	NO. OF CASES	,
Stomach	11	
Liver	**07**	
Spleen	43	
Duodenum	02	
Colon	01	
Kidney	01	

The abdominal injuries were dealt with through an abdominal incision in 20 cases. No difficulties felt in repair of diaphragmatic tears and abdominal visceras by this route. One ofthe duodenal injuries was complicated by the development of a external flsula, which closed spontaneously but one died.

There was 4 death 'a mortality of 16% in stab, One case of colonic injury, one case of splenic injury and one case of gastric injury- all have established peritonitis, all the 4 cases admitted **to hospital nearly 48** hours after the injury.

V. DISCUSSION

The high incidence of diaphragmatic involvement in penetrating chest injuries is mainly due to the vulnerability of the diaphragm on the left side. In the absence of obvious evidence of thoracoabdominal injury, sign of peritoneal irritation were the most reliable indicators of diaphragmatic penetration. When only the diaphragm has been traumatized and injuries confined to lesser sac, there is little or no sign of peritoneal irritation. As the initial mortality is related to the delay in treating the intraabdominal wounds and the late mortality is usually associated with uncomplicated diaphragmatic and infection. Radiography and in selected cases thoracoscopy is useful.

As far as approach for exploration is concerned, abdominal approach employed in eighteen cases for the repair of the abdominal injuries presented no technical difficulties. Usually thoracic component of a thoraco abdominal injuries can be dealt conservatively except in associHed cardiac injuries.

VI. CONCLUSION

Diaphragm injury is found up to 40% of patient with penetrating trauma. Penetrating thoraco abdominal injuries either gunshot wound or stab wound are associated with diaphragm injuries. Injuries in the left hemidiaphragm are three times more often than that the right. Diaphragm injury is often associated with other intra-abdominal injuries most frequently liver laceration in right side and stomach, spleen, colon on the left side. Associated thoracic injuries are himo-pneumothorax.

Timely identification and high index of suspicion reduces the risk of morbidity and mortality in diaphragmatic trauma. It is essential to identify and repair as early as possible. Some times presenting sign and symptom in small tear in diaphragm is masked due to sealed off by the omentum, while in large tear pleural contamination becomes inevitable and thoracotomy may become necessary for adequate pleural toilet. A sixteen percentage incidence of empyema in this series indicated grater liability to pleural infection where the omentum has failed to seal off the diaphragmatic tear. All the death in this series resulted from the abdominal lesion. So, delay in operating can be disastrous and.

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