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Case Report

A penetrating thoracoabdominal injury with arrow head: a case report

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ABSTRACT

Penetrating injuries to the chest present a frequent and challenging problem. The majority of these injuries can be managed non-operatively. The selection of patients for operation or observation can be made by clinical examination and appropriate investigations. A 17 years old male patient presented with an arrow inserted in his chest wall 5 cm. below right nipple. The patient was stable hemodynamically with no signs and symptoms of pneumothorax. Imaging of chest and abdomen, followed by laparotomy and removal of the arrow head from left lobe of liver performed.

Keywords: Penetrating injury, Intrathoracic abdomen, Pneumothorax, Hemodynamics, Laparotomy

INTRODUCTION

As underscored by the ATLS manual of the American College of Surgeons the intrathoracic abdomen, bounded by the nipple line, costal margins, and the scapula, is a difficult area to evaluate after penetrating trauma. The organ at risk include the liver, spleen, stomach, lower esophagus, and, in particular, the diaphragm.[1] While patients with hemodynamic instability or peritoneal signs undergo laparotomy, clinically stable patients with equivocal peritoneal signs pose a challenge in management. This problem is frequently compounded by intoxication with alcohol or drugs.[2] Even in a patient with clear sensorium, small penetrating injuries to the diaphragm can exist without significant physical findings.[2] These factors necessitate an index of suspicion to the degree that a laparotomy may be needed to exclude the presence of significant intraperitoneal injury.

CASE REPORT

History

A 17 year old male patient presented with an arrow inserted in his chest wall 5cm. below right nipple. The patient was taken to the hospital almost 12 hrs after the injury happened. There is pain along the right side of chest with slight bleeding. There is no history of respiratory distress and bleeding with cough. There is no history of any pain abdomen, vomiting or black stool.

Figure 1: Physical examination findings.

Physical examination

During primary survey it was observed that the airway of the patient was patent and there was no difficulty in

breathing. The patient is hemodynamically stable with pulse rate of 92 beats/min. and BP 116/70 mm-Hg. He was conscious, alert, oriented and cooperative. On complete exposure a wooden stick was found inserted into the right side of chest wall about 5cm below right nipple with some blood clots in surrounding area. On auscultation bilateral vesicular breath sounds are audible with no crepitations.

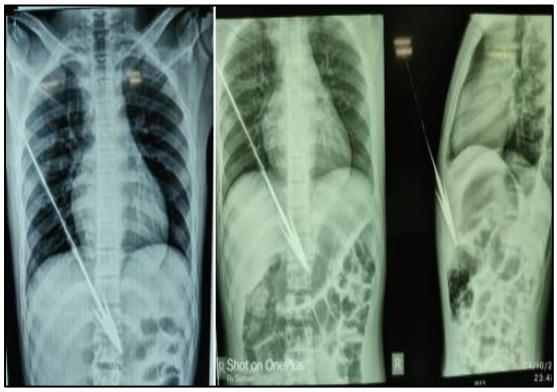

Figure 2: X- Ray feature of foreign body.

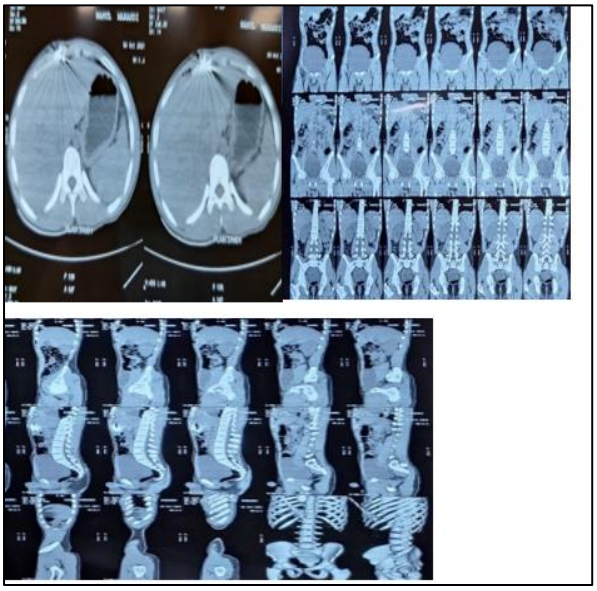

Figure 3: CECT plates showing the arrow head.

Investigations

X- ray chest revealed no sign of right sided pneumothorax. A linear foreign body is seen. In lateral view the foreign body found superficial in the abdominal cavity.

Contrast Enhanced CT (CECT) Scan of abdomen shows, a metallic foreign body seen at right upper abdominal cavity with the arrow head present in the left lobe of liver through its anterior surface. No blood or any fluid seen in the peritoneal cavity.

Figure 4: Removed arrow head.

Management

An exploratory laparotomy is planned for this patient after adequate resuscitation.

Operative details

Position

Position was supine.

Anaesthesia

General anaesthesia was administered.

Incision

Bilateral subcostal incision, extended upto xiphisternum in the midline (Mercedes Benz Incision) made.

Findings

On opening the peritoneum and cutting falciform ligament a wooden stick found inserted in the left lobe of liver anterior surface. The pointed tip of arrow head is seen piercing through the inferior surface of left lobe of liver. There is a slight mucosal tear of the anterior surface of stomach. No injury to the diaphragm found after thorough search.

Procedure

The arrow head is removed in antegrade way through the inferior surface of liver. No severe bleeding found after removal of arrow head. Hemostasis secured and mucosal tear in the anterior surface of stomach is sutured with 2-0 polyglactin. Liver parenchymal tear is closed with 3-0 polyglactin. A drain is placed at hepatorenal pouch of Morrison.

Closure

Sheath closed with No. 1 polypropelene and skin closed with skin stapler.

DISCUSSION

Fortunately, most liver injuries (70-90%) require minor therapy.[3]

Most authors advocate routine surgical exploration of all patients with suspected liver injuries, especially when taking into account the high incidence of associated intra-abdominal injuries.[4] It has been repeatedly reported that many liver injuries are treated with only a laparotomy or a laparotomy with drainage, because they do not bleed at the time of operation.[5,6]

Many authors advise against suturing of a non-bleeding liver wound.[7,8] Mays suggested that suturing of deep lacerations of the liver may cause haematobilia, secondary haemorrhage, and abscess formation.[7]

The management of penetrating trauma to the lower chest and upper abdomen continues to generate interest, controversy, and discussion. The intrathoracic abdomen as defined by the ATLS guidelines of American College of Surgeons, is the area protected by the bony thorax extending from the nipple line to the costal margins. Evaluation of the diaphragm is the most difficult clinical problem in this region, especially after penetrating trauma. Missed diaphragmatic penetration may manifest itself with disastrous consequences years later as a strangulated diaphragmatic hernia. The factors that predispose a patient to non healing of an unrepaired diaphragmatic laceration and the subsequent development of a hernia include, the constant motion of the diaphragm; the thinness of the structure; and the negative pressure gradient between the pleural and peritoneal cavities.[9,10]

CONCLUSION

In the course of the 21st century, much progress has been made in achieving hepatic injury hemostasis. However, the progress has not always been linear. Some lessons have been learned, set aside, and then reconsidered in light of changing circumstances.

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