Case Report

Diaphragmatic Perforation without Penetration into the Peritoneum in Sharp Thoracoabdominal Injury

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Abstract

In diaphragm injuries, especially those which are left sided, it is recommended to repair diaphragm perforation to prevent complications. However, we found two cases of diaphragm injuries including two 27 and 31 years old men who were injured with stab but they were not repaired at thoracoscopy. Both patients were haemodynically stable. Chest X-ray and CT-Scan were not in favor of diaphragm perforation in both cases. The thoracoscopic finding was a 1.5 (case 1) and 1 cm tearing on the left diaphragm on the left muscular part of the diaphragm without penetrating into the abdominal cavity and with an intact peritoneum documented by probing. Due to intact peritoneum and absence of peritoneal signs, no further thoracotomy was performed. The patients were followed for 6 months with CXR and also physical examination. They did not develop any complication on the follow-up. In conclusion, in spite of diaphragm injuries, since peritoneum was intact in both cases, neither underwent thoracotomy which is invasive. They were asymptomatic during the 6 months of the follow up.

Keywords: Diaphragm tear; Repair; Thoracoscopy; Stab wound

Introduction

Frequency of occult diaphragmatic injury in penetrating injuries of the thoracoabdominal region is reported to be 10 to 42% in different studies and has been higher in gunshot wounds and in the left side.[1-3] Diagnosis of diaphragm injury should be made immediately due to subsequent intrathoracic visceral herniation and strangulation, with an associated morbidity and mortality rate of 30-50%.[4] In these instances, especially in left side injuries, it is recommended to repair the diaphragm perforation to prevent complications.[5] However, we found two cases which were injured with stab and in thoracoscopy the muscular portion of their diaphragm perforation was found not to be accompanied with injury to the peritoneum. Such cases have not been reported till now according to our ten years of experience in managing trauma patients and excessive search in journals.

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Case 1

A 31 year old man referred to the Emergency Room due to stab injury in the left anterior axillary line, eight intercostal space two hours before admission. The symptoms were dyspnea and left sided chest pain. In the physical examination, he was anxious and tachycardic pulse rate: 130/min, respiratory rate: 27/min, blood pressure: 110/70 mmHg and temperature: 37.5 °C orally. He had decreased breathing sound in the lower part of the chest. After early resuscitation, the chest X-ray was in favor of hemothorax which was managed by thoracostomy tube. A chest CT-Scan was performed for the patient and according to the radiologist attending, there were no signs of diaphragm perforation. The patient was transferred to the operating room for thoracoscopy as the routine standard to diagnose diaphragm perforation. Thoracoscopic finding was a 1.5 cm tear on the left muscular part of the diaphragm without penetrating into the abdominal cavity with intact peritoneum documented by probing. Due to intact peritoneum and absence of peritoneal signs, no further thoracotomy was performed.

The chest tube was removed two days later and he

was discharged from hospital with normal chest X-Ray. The patient was followed for 6 months with CXR and also physical examination, without developing any complication on the follow-up.

Case 2

A 27 year old Afghani man referred to the emergency room because of being injured with a knife to the left thorax in the 7th intercostal space mid-axillary line 2 hours prior to admission. His complaint was pain in the left side of the chest. His BP was 120/70 mmHg, RR: 17/min and PR: 100/min. Decreased breathing sound in the left side of the thorax was evident in auscultation.

Chest X-Ray showed hemothorax and subcutaneous emphysema; the pleura was penetrated by digital examination. A thoracostomy tube was inserted for him immediately. The report of chest CT-scan by the attending radiologist was normal. Thoracoscopy done for him showed about 1 cm tearing on the left diaphragm without entering to the abdominal cavity. It was not repaired due to intact peritoneum. The patient received cefazolin, 1 g every 8 hours parenterally before inserting chest tube until the removal of the chest tube. He was followed in clinic with physical exam, and evaluation of CXR for 6 months without any sequellae.

Discussion

In penetrating thoracoabdominal injury, especially in the left side, it is recommended to do thoracoscopy or laparoscopy to evaluate perforation of the diaphragm and/or peritoneum.[3,6] This procedure should be converted to thoracotomy or laparotomy to repair injuries to the diaphragm and peritoneum if present.[7,8] Studies have reported cases of thoracoabdominal penetrating injury in which peritoneal penetration was laparoscopically excluded and thus unnecessary open laparotomy was avoided with an incidence of 74%.[7] However, perforation of the diaphragm with intact peritoneum was not reported in the thoracoabdominal injured patients in previous studies. We report two patients who referred to the emergency room with stab injury in the thoracoabdominal region. They were hemodynamically stable and did not have any associated organ injury. Thoracoscopy was done for them, showing diaphragm injury in both without penetration of the peritoneum. Because the peritoneum was not involved in our cases, they were not considered for surgical repair. They were followed up for 6 months for any possible complications. Neither clinical complications nor abnormal findings in CXR were detected during the 6 months.

As we found two cases of thoracoabdominal stab wound in whom the diaphragm injury was present without penetration of the peritoneum and they did not develop any complication during the 6 months of follow up.

Conflict of interest: None declared.

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