

Peptic Ulcer Perforation in the Thorax (Diaphragmatic Hernia): A Diagnostic Challenge

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Citation

S Dalal, R Sahu, Nityasha, M Vashisht, R Dahiya. *Peptic Ulcer Perforation in the Thorax (Diaphragmatic Hernia): A Diagnostic Challenge*. The Internet Journal of Surgery. 2008 Volume 19 Number 1.

Abstract

In modern surgical practice, diaphragmatic injury is seen with increasing frequency, but prompt recognition of diaphragmatic rupture resulting from blunt trauma can still pose a significant diagnostic challenge. We encountered an interesting case, where a traumatic diaphragmatic hernia could only be diagnosed after 20 years of the initial chest trauma and that too because of associated peptic ulcer perforation in the chest. CT scan revealed abdominal contents in the chest and associated peptic perforation was diagnosed on the operating table. He was successfully managed by exploratory laparotomy, closure of perforation and diaphragm repair with a prolene mesh.

INTRODUCTION

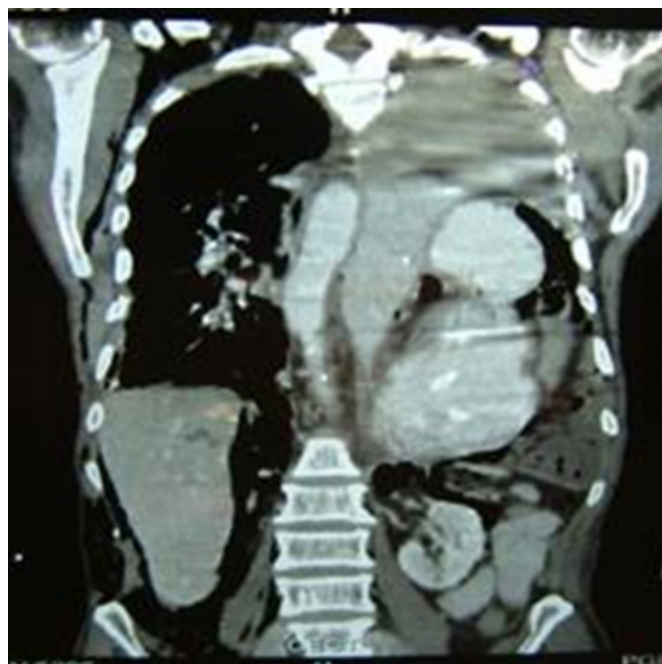
Herniation of abdominal viscera into the thoracic cavity is known as diaphragmatic hernia and it can develop after blunt/penetrating trauma, or due to a congenital defect in the diaphragm. Small Bochdalek's hernias, which are asymptomatic posterolateral congenital diaphragmatic defects, may remain undiagnosed until adulthood.¹ But these incidental Bochdalek's hernias in adults are quite uncommon and clinically insignificant. The significant cause of diaphragmatic hernia in adults is traumatic diaphragmatic rupture. TDR is now diagnosed with increasing frequency and is considered as a marker of severe trauma.

CASE REPORT

A 60-year-old, ill-looking male was admitted to the emergency department of our hospital with complaints of acute abdomen and respiratory difficulty. Examination revealed signs of peritonitis with almost no air entry on the left side of the chest. Chest x-ray done in search of free air under the diaphragm revealed massive pleural effusion on the left side without any free air in the abdominal cavity. Emergency CT scan of chest and upper abdomen was done, which revealed presence of stomach and gut loops in the left chest with hydropneumothorax (Fig. 1).

Figure 1

Figure 1: CT scan of the chest showing stomach and bowel loops in the left chest with hydropneumothorax



Following this CT report, further interrogation about past history was done and it was revealed that the patient had a history of blunt trauma to the lower chest about 20 years back. He had been hospitalised for that injury for five days in a district hospital and had been told at the time of discharge that his chest x-ray was unrevealing.

So a provisional diagnosis of delayed diaphragmatic hernia

with gut gangrene was made. He was explored with a supraumbilical midline incision with preparation for thoractotomy if required. The operative findings were: (i) big defect in the diaphragm in its posterocentral part, (ii) most of the stomach, part of the duodenum and loops of small and large gut herniating into the chest, (iii) perforation of one centimeter in diameter in the first part of the duodenum, (iv) biliary collection of about one liter in the left pleural cavity. The contents in the pleural cavity were having dense adhesions, which were gently separated by blunt dissection and all abdominal contents were repositioned back in the abdominal cavity. Duodenal perforation was closed with a Graham's patch. The defect of the diaphragm was defined and since it was large, it was repaired with the help of a prolene mesh. Both pleural and peritoneal cavities were thoroughly cleaned, the pleural cavity was drained with an intercostal drain and the abdomen closed in layers. Recovery from general anaesthesia was smooth but the patient was kept on elective ventilator for 24 hours for proper inflation of the lung. Chest x-ray after 24 hours showed a fully expanded left lung (Fig. 2).

Figure 2

Figure 2: Chest x-ray after 24 hours showing a fully expanded left lung



In the postoperative period, the patient developed a left-sided empyema because of which his hospitalisation was prolonged. The amount of pus from the left intercostal drain gradually decreased after giving antibiotics according to culture sensitivity reports and subsequently it became dry. The patient was discharged in healthy condition after three

weeks.

DISCUSSION

Almost half a millennium has passed since the first description of a traumatic diaphragmatic rupture was made by Sennertus.² Diaphragmatic hernias in adults usually result after traumatic diaphragmatic rupture (TDR) caused by blunt truncal traumas or penetrating stab wounds. The hernias may be recognised during the period of hospitalization immediately following the trauma (immediate type of hernia described by Carter et al.³). If the TDR is not recognised during the immediate posttraumatic period, the patient may present in any of the following ways: (i) recover and remain symptom free, (ii) suffer from chronic abdominal and or chest symptoms, (iii) present with an acute crisis with signs of intestinal obstruction/strangulation. Recently, all these forms have been labeled as delayed presentation.⁴ These hernias may present months or even many years after apparent recovery from the traumatic incident. Occasionally, such patients forget their initial events and their hernias are found on a routine chest film done for some other purpose.⁴

Most patients with delayed presentation of traumatic diaphragmatic hernias have acute symptoms. These may be those of classic intestinal obstruction like abdominal pain, vomiting, distension etc., with or without chest symptoms. Gravier and Freeark⁵ stated that diaphragmatic hernia should be suspected if any of the following four criteria is present: (i) intestinal obstruction with history of trauma in the past, (ii) intestinal obstruction with radiological changes at the base of the left lung, (iii) small-bowel obstruction in elderly patients having no abdominal scar/hernia, (iv) large-bowel obstruction in young patients. Hardy emphasised the fact that physical signs are of little help unless the diagnosis is already suspected, and usually the signs and physical findings can be correlated only in retrospect.⁶

All authors agree that radiographic studies are more useful diagnostic aids. Various diagnostic methods to diagnose diaphragmatic hernia include plain radiographs of chest or after nasogastric tube placement, fluoroscopy, upper and lower G.I. contrast studies, ultrasonography, CT scan of the chest, MRI and radionuclide peritoneography.^{6,7} A chest x-ray may simply reveal a pleural effusion or gut loops within the chest with obliteration of the diaphragm outline. The diagnostic accuracy of plain chest films is 13-62%.⁷ The first report of CT diagnosis of TDR appeared in 1980.⁶ While abdominal CT is very popular for the assessment of multiply injured patients, its diagnostic accuracy for diaphragmatic

injuries is highly variable. MRI and DPL (diagnostic peritoneal lavage) have also been used as diagnostic modalities with inconsistent results.⁷ Recently, laparoscopy and video-assisted thoracoscopic surgery (VATS) have been examined for evaluation of diaphragmatic injuries.⁸ Celiotomy is currently considered the gold standard with regard to diagnosis of diaphragmatic injuries.

Once the diagnosis is made and the patient adequately resuscitated, immediate operation is mandatory. Most authors agree that traumatic diaphragmatic hernias with delayed presentation should be approached through the chest, since the adhesions within the chest can be freed easily in this way.⁹ In difficult cases of incarcerated/strangulated hernia, a combined approach is recommended. If the defect in the diaphragm is very large, it is repaired with the help of a prolene mesh.

The patient in consideration was an elderly male where traumatic diaphragmatic hernia could only be diagnosed after 20 years of the initial trauma. Though diagnosis was suspected on CT scan, it was exactly confirmed on laparotomy because of associated peptic ulcer perforation. Though most studies in the literature suggest a thoracic approach for such cases, the author's viewpoint is that these cases can and should be done by the abdominal route, since many of them are associated with abdominal complications, which are better dealt with by this route, like in our case.

The case is being reported to highlight the following points:

- Delayed presentation of traumatic diaphragmatic hernia as late as after 20 years is rare and its

association with peptic ulcer perforation is still rarer.

- A high index of suspicion is required for initial diagnosis of diaphragmatic injuries to avoid long term sequelae.
- Such a case can be dealt with in a better way by the abdominal route.

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