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Case Report

Spontaneous Diaphragmatic Hernia-A Case Report and Review of Literature

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Abstract

Background: Spontaneous diaphragmatic hernia without any apparent history of trauma is a very rare condition.

Case: A 38year old female who was admitted to emergency department with abdominal pain, nausea and constipation for 5 days and was diagnosed with spontaneous diaphragmatic hernia. There was no significant past history of trauma. The patient was treated with laparotomy and the diaphragmatic defect was repaired primarily.

Conclusion: Spontaneous acquired diaphragmatic hernia due to lax and thinned out diaphragm is very rare condition and very difficult to diagnose unless a very high index of suspicion is kept in mind. Surgical repair is the definitive treatment.

Introduction

Diaphragm is the most important muscle of respiration and is composed of peripheral muscular portion which inserts into a central aponeurosis. Acute diaphragmatic hernia following trauma is rare, despite high prevalence of trauma. Up to 5% of trauma patients may suffer traumatic diaphragmatic injury [1,2]. Spontaneous acquired diaphragmatic hernia without any apparent history of trauma is even more rare presentation [3]. Early recognition of spontaneous acquired diaphragmatic hernia is of utmost importance because delay in the diagnosis may result in an increased morbidity and mortality. In this report, we present a patient who was admitted to emergency department with abdominal pain, nausea and constipation for 5 days and was diagnosed with spontaneous non-traumatic diaphragmatic hernia.

Case Presentation

A 38 year old female patient was admitted to emergency department with abdominal pain, nausea and constipation for 5 days. Pain was continuous in nature with severe aching in intensity and radiating to left side of chest. There was no history of trauma. There was no significant past and family history and no significant past history of similar episodes. Her vitals were within normal parameters.

Per abdomen examination revealed generalized distention with tenderness while respiratory system revealed diminished breath sounds in left mid and lower chest. Complete blood counts and biochemical parameters were normal. Chest X-ray was suggestive of distended bowel loops in left hemithorax with haustrations within which air fluid level was seen (Figure 1). USG abdomen was

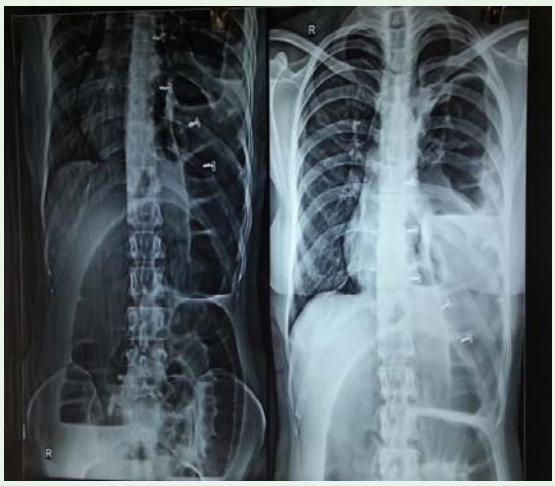

Figure 1: X-ray Chest PA view and Abdomen (standing).

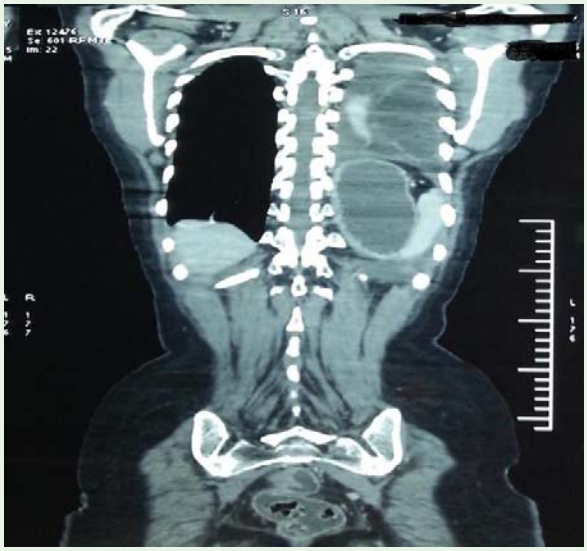

Figure 2: CT scan Chest and Abdomen.

suggestive of 2cms defect in left hemidiaphragm through which bowel loops seem to be herniated with distended bowel loops in abdomen. CT scan chest and abdomen was suggestive of herniation of colon into left thoracic cavity through the defect in left hemidiaphragm with elevation of left hemidiaphragm due to cranial displacement of stomach, pancreas and spleen with gastric volvulus and left moderate pleural effusion (Figure 2).

Emergency exploratory laparotomy was performed. 4x4cm^2 defect was found in left side of diaphragm near the central part. The entire diaphragm was lax with thinned out muscular component. Part of the stomach, spleen, distal transverse colon, splenic flexure and proximal descending colon were found to be herniated into left hemithorax.

Transverse mesocolon was adhered to the diaphragmatic defect which was separated. The defect was widened and herniated contents were gently reduced back into the peritoneal cavity. The defect was then primarily repaired with non-absorbable suture prolene no. 2-0 in double breasting manner.

Discussion

Spontaneous diaphragmatic hernia is one of the rarest thoraco-abdominal emergencies, with 28 detailed reports published in world literature (1956-2009) [4-8]. Coughing was the preceding event in 9 (32%) patients, physical exercise in 6 (21%), vaginal delivery in 4 (14%), vomiting in 2 (7%) and massage in 1 (4%); no history was available for single comatose patient. There were 5 (18%) patients in whom no effort preceded the hernia. Hamaoui et al. reported a case of spontaneous diaphragmatic hernia in a 35-year-old male patient with Ehlers-Danlos syndrome, a genetic disorder that causes abnormalities in the synthesis and structure of collagen and can lead to multiple anatomical defects [9]. Pehar et al. reported a case of spontaneous diaphragmatic hernia related to local invasion by retroperitoneal liposarcoma [10]. Servais et al. suggested that symptomatic diaphragmatic eventration during pregnancy should be repaired during the third trimester once fetal organogenesis is complete in order to prevent further herniation from the enlarging uterus and the risk of hernia strangulation [11]. Yang et al. reported a spontaneous diaphragmatic hernia in a 29-year-old woman and suggested that spontaneous diaphragmatic hernia might be caused by a static sport activity, such as pilates [12].

Acquired diaphragmatic hernias are usually traumatic and may be due to blunt or penetrating thoraco-abdominal trauma. Road traffic accident is the most common cause.

However, spontaneous diaphragmatic hernias may also occur. They are most commonly found at the esophageal hiatus or at the points of failure of the embryonic fusion of diaphragm. The latter are usually sub-costal (foramen of Morgagni, Larrey's spaces) or posterior (pleuroperitoneal or foramen of Bochdalek) in origin. Such occurrence has been reported in athletes, dancers, weightlifters, during exercise [3], eclampsia, labour [6], violent emesis, asthma and even pertussis.

Here in the present case it was lax diaphragm and thinned out muscular component of the diaphragm which resulted in rupture of diaphragm leading to herniation of abdominal contents into the left thoracic cavity.

Clinically, diaphragmatic rupture has 3 phases-the initial or acute phase, the interval phase and the obstructive or late phase. The initial phase continues for 2weeks, classically reported symptoms such as abdominal pain, shortness of breath and chest pain. The interval phase may be relatively asymptomatic and rupture may be discovered only by incidental radiography. Finally, during the phase of obstruction and strangulation, most patients have acute symptoms secondary to acute respiratory or bowel obstruction. Also, most commonly patients have acute abdomen secondary to incarceration and strangulation.

In cases of diaphragmatic rupture even due to simple causes such as coughing, nausea or vomiting, the negative pressure in the thorax may lead to herniation of the intra-abdominal organs into the thoracic cavity. The difference in the pressure between abdomen and thorax, which may reach up to 100mmHg during respiration, is the most important factor contributing to herniation of abdominal organs into thorax.

Diagnosis is based on clinical presentation i.e. dyspnea, palpitation, cyanosis, abdominal pain and distention and confirmed by imaging i.e. chest X-ray, CT scan, barium study and MRI.

Differential diagnosis includes giant hiatal hernias, pulmonary sequestration, neoplasia, phrenic nerve palsy, atelectasis, pleural effusion and eventration of diaphragm.

The management of diaphragmatic hernia is surgical and consists of reducing the viscera and sealing the diaphragmatic defect. In the present case, laparotomy was performed and primary repair of the defect was done with non-absorbable suture.

Complications of diaphragmatic hernia include volvulus, incarceration, strangulation, hemorrhage and perforation of hollow viscus.

Prognosis is good in adults but poor when complications appear such as organ ischemia and hemorrhage.

Conclusion

Spontaneous acquired diaphragmatic hernia due to lax and thinned out diaphragm is very rare condition and very difficult to diagnose unless a very high index of suspicion is kept in mind. Surgical repair is the definitive treatment.

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