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Case Report

A Rare Case of Spontaneous Diaphragmatic Hernia with Gastric Perforation Presenting Like an Empyema

Abhishek Samprathi[1]*, Nischal Pandey[2], Padmakumar V Arayamparambil[3]

[1]Critical Care Services, Narayana Institute of Health Sciences, Bengaluru, Karnataka, India.

[2]Cardiothoracic surgery department, Fortis Hospitals, Bengaluru, Karnataka, India.

[3]Department of Critical Care Medicine, Fortis Hospitals, Bengaluru, Karnataka, India.

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ABSTRACT

Diaphragmatic hernias are rare and mostly congenital, rarely spontaneous. Perforation and other complications of diaphragmatic hernias are even rarer and associated with significant morbidity and mortality. We report a patient presenting to the emergency department with features of empyema requiring intercostal drainage. However, on clinical worsening, radiological imaging showed features of diaphragmatic hernia and a subsequent thoracostomy revealed a herniated gastric perforation. Such cases are very rare and need a high index of suspicion for the diagnosis and early appropriate surgical management. Otherwise, it is associated with very high rates of mortality.

Introduction

Diaphragmatic hernias are rare and mostly congenital, rarely spontaneous [1]. Perforation and other complications of diaphragmatic hernias are even rarer and associated with significant morbidity and mortality [2]. Poor outcomes are related to its non-specific nature of symptoms and delay in diagnosis [3]. Here, we report an unusual case of spontaneous diaphragmatic gastric hernia with perforation and discuss the diagnostic and management challenges.

Case Report

A 62-year-old lady presented to the emergency department with breathing difficulty for five days. She did not have fever, vomiting, chest pain, or a history of trauma. She had a medical history of diabetes mellitus, rheumatic heart disease and atrial fibrillation. She had undergone a transcatheter mitral valve replacement previously with no other previous history of surgery. Medication history revealed intake of oral anti-diabetic, anti-arrhythmic and anticoagulant medicines. On admission, she was conscious, oriented, tachycardic, and hypoxic with normal blood pressure and temperature. A physical examination revealed tenderness in the left infra-axillary area and on auscultation breath sounds were diminished on the left side. Laboratory data revealed high WBC counts, serum creatinine, ESR, and Pt-INR was 2.87. Chest x-ray showed a large left sided opacity suggestive of a pleural effusion (Figure 1).

She required non-invasive ventilation (NIV) for hypoxia, anti-arrhythmic drugs for atrial fibrillation, and empirical broad-spectrum antibiotics for probable pneumonia and sepsis. Pleural tapping was done, which revealed a turbid and hemorrhagic fluid with high WBC counts and grew multi-drug resistant Klebsiella pneumonia. A left-sided intercostal drain (ICD) was inserted for empyema and antibiotics were adjusted to the sensitivity pattern. She clinically improved and was shifted to ward. However, five days later she developed worsening dyspnea and hypoxia requiring NIV and ICU readmission. Antibiotics were escalated and a bedside thoracic ultrasound screening revealed a collection in the posterior part of the lung. A non-contrast CT scan was

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*Corresponding author.
E-mail address: abhisamprati@gmail.com

performed which revealed a left hydro-pneumothorax with atelectasis and consolidation of the left lung with chest tube in-situ. The tip of the tube was anterior to the pleural fluid collection with adjacent consolidation. Hence, another ICD was placed on the posterior aspect of the lung and pleural fluid was re-sent for culture and analysis. This also grew MDR Klebsiella pneumonia and antibiotics were adjusted according to the sensitivity pattern. The new onset hydro-pneumothorax was difficult explain in the absence of a bronchopleural fistula. However, the contents of the ICD were similar to nasogastric feeds, and hence an esophagopleural fistula was suspected. A repeat CT chest with oral positive and intravenous (IV) contrast study showed a fistulous communication between the lower end of a herniated bowel and the left pleural cavity with a moderate-sized left hydro-pneumothorax (Figure 2).

Meanwhile, the patient was intubated due of worsening shock and oxygenation. She underwent an emergency thoracotomy, which revealed a herniated stomach and a defect in its greater curvature (Figure 3). Sleeve resection of the greater curvature of the stomach with left diaphragmatic repair and left lung decortication was done. The gastric biopsy revealed an ulcerated, edematous, and congested gastric wall. Postoperatively she was weaned off the ventilator. However, she had a sudden cardiac arrest, probably secondary to an intracranial bleed since she was on anticoagulation. She succumbed to her illness eventually after the family opted for pallation.

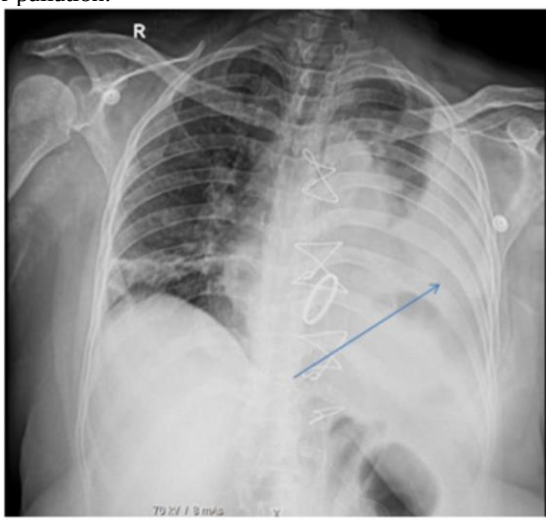

Figure 1-The Chest x-ray showing a large left pleural effusion with underlying collapse and consolidation of the left lung

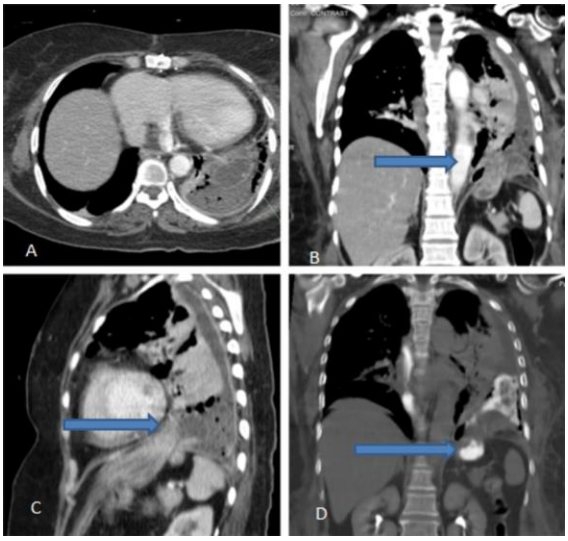

Figure 2- The CT chest with oral positive and intravenous (IV) contrast study showing a fistulous communication (arrow mark) between the lower end of the herniated bowel and the left pleural cavity with a moderate-sized left hydro-pneumothorax.

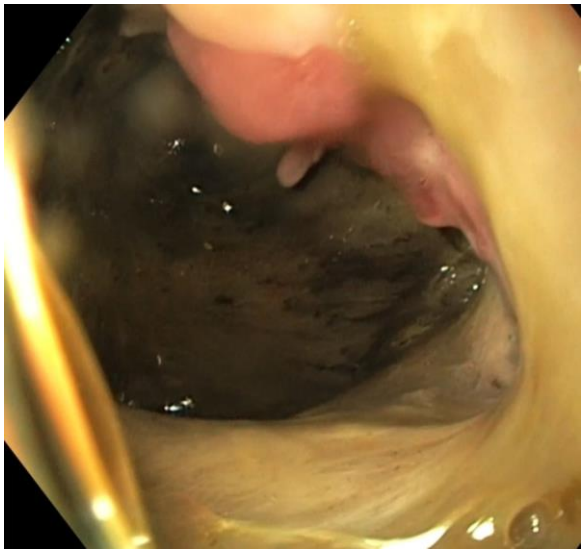

Figure 3-Thoracotomy revealing a defect in the greater curvature of the herniated stomach

Discussion

The highlight of this case is the inciting event and the sub-acute nature of the presentation. Also, the interesting question here is whether the empyema led to the necrosis of the gastric wall and subsequent perforation, or the gastric perforation led to an empyema. This patient did not have any history of surgery other than the transcatheter mitral valve replacement which rules out iatrogenic and a congenital cause for diaphragmatic hernia was ruled out. Excluding hiatus hernia, the most common cause of adult-onset diaphragmatic hernia is

trauma. However, our patient did not have any history of trauma. Post-CPR and post-CABG diaphragmatic hernias with risk factors like high body mass index and a sustained increase in intra-abdominal pressure leading to hernia formation have been reported [4-6]. Our patient did not have any such history. Hence, a spontaneous diaphragmatic hernia was likely, which has been reported earlier with varied etiologies [7]. In our patient, the hernia was located at the center of the left diaphragm and her initial clinical presentation with mild severity was disproportionate to the subsequent finding. Similar presentations have been reported previously [8-9]. The initial presentation with left axillary pain and tenderness could be explained due to empyema. It is interesting to note that the patient improved significantly after the first ICD insertion. This could be due to drainage of the thoracic contents and antibiotics. Hydro-pneumothorax seen on the first CT scan was attributed to the gastric perforation observed on thoracotomy. Perforation and incarceration of diaphragmatic hernias are rare but potentially life-threatening. Mortality of gastric perforation into the thoracic cavity is reported at 42–56%. The delay in diagnosis is often due to the non-specific nature and/or lack of symptoms. In this case, a careful observation of the ICD contents, contaminated with NG feeds led to further evaluation and diagnosis. The true extent and severity of the gastric perforation was realized only on a thoracotomy. Our patient improved after surgical intervention and was successfully weaned off the ventilator. The cause for her death was not related to diaphragmatic hernia and gastric perforation.

Conclusion

Spontaneous diaphragmatic hernia with perforation is extremely rare and life threatening. A high degree of suspicion with careful observation of intra-thoracic drain contents and early radiographic evaluation followed by definitive surgical treatment can reduce mortality.

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