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General Surgery

INCIDENTAL FINDING OF RIGHT-SIDED IDIOPATHIC SPONTANEOUS ACQUIRED DIAPHRAGMATIC HERNIA: A RARE CASE REPORT

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ABSTRACT **Background:** Diaphragmatic hernias are classified as congenital or acquired, with the latter typically resulting from traumatic or iatrogenic injuries. Spontaneous acquired diaphragmatic hernias without history of trauma or surgery are exceedingly rare, particularly on the right side due to the protective effect of the liver. This case emphasizes a unique presentation and management strategy for this uncommon clinical entity. **Case Presentation:** An 83-year-old female presented with progressive shortness of breath, dry cough, chest discomfort, nausea, vomiting, and regurgitation of food. She had no prior incidents of trauma or surgical procedures. The initial clinical examination suggested pleural effusion. However, ultrasonography revealed a right-sided diaphragmatic tear with omental herniation into the right hemithorax. Computed tomography confirmed a large defect in the anteromedial aspect of the right hemidiaphragm with omental herniation causing compressive atelectasis of the middle and lower lobes of the right lung. **Discussion:** The patient underwent successful open surgical repair through a thoracoabdominal approach. This case is unusual due to its right-sided presentation in an elderly patient without trauma history, highlighting the diagnostic challenges associated with this condition and the importance of appropriate imaging. **Conclusion:** Spontaneous acquired diaphragmatic hernias represent a rare clinical entity requiring high clinical suspicion for diagnosis. Timely identification and suitable surgical treatment are essential to avert complications. This case underscores the necessity of recognizing diaphragmatic hernia as a potential cause of respiratory symptoms, even in the absence of traumatic injury.

KEYWORDS : Diaphragmatic hernia, spontaneous, idiopathic, right-sided, geriatric, thoracoabdominal approach

INTRODUCTION:

Diaphragmatic hernias happen when abdominal organs slip into the thoracic cavity as a result of a defect in the diaphragm. They are categorized as either congenital or acquired, with the latter primarily caused by blunt or penetrating trauma or as a postoperative complication [1,2]. However, the development of acquired diaphragmatic hernias in the absence of trauma or surgical history—termed spontaneous or idiopathic hernias—is exceptionally rare, with fewer than 30 documented cases [3]. Right-sided spontaneous diaphragmatic hernias are even more uncommon due to the liver's protective role in preventing herniation [4]. The proposed mechanism involves congenital diaphragmatic weakness combined with acute elevations in intra-abdominal pressure from actions like coughing, vomiting, or physical strain [5]. Due to their nonspecific cardiopulmonary or gastrointestinal symptoms, these hernias often remain undiagnosed unless a high degree of clinical suspicion is maintained [6]. This case underscores the rarity of right-sided spontaneous diaphragmatic hernias and highlights the need for timely recognition in patients with unexplained respiratory or gastrointestinal complaints.

CASE PRESENTATION:

An 83-year-old woman arrived at the outpatient department of our tertiary care hospital, reporting a gradual increase in shortness of breath over the past three months. Her symptoms included dry cough, intermittent right-sided chest discomfort, nausea, vomiting, and postprandial regurgitation. She had no history of trauma, falls, or prior abdominal or thoracic surgeries. Her medical history was notable for hypertension, managed with amlodipine (5 mg once daily), and osteoarthritis of the knees. She claimed that she had no previous history of smoking or consuming alcohol. On examination, she was hemodynamically stable with a heart rate of 88 bpm, blood pressure of 142/84 mmHg, respiratory rate of 22 breaths per minute, and oxygen saturation of 94% on room air. The respiratory assessment showed reduced breath sounds and a dull percussion note in the right lower lung field, while the abdominal examination yielded normal results. Laboratory tests showed mild leukocytosis (WBC: 11,400/mm³) with normal hemoglobin, platelet count, renal, and liver function tests.

Chest radiography (Fig 1) showed an elevated right hemidiaphragm with homogenous opacity in the right lower lung field, initially suggestive of pleural effusion. However, thoracic ultrasonography unexpectedly revealed a right-sided diaphragmatic defect with omental herniation into the hemithorax.

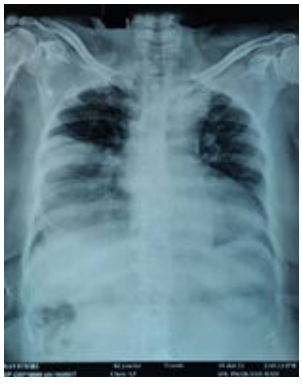

Fig 1: Chest X ray AP view

For further evaluation, contrast-enhanced CT of the chest and abdomen confirmed a 4.2 × 3.8 cm anteromedial diaphragmatic defect with omental fat herniation, causing compressive atelectasis of the right lung's middle and lower lobes (Fig 2).

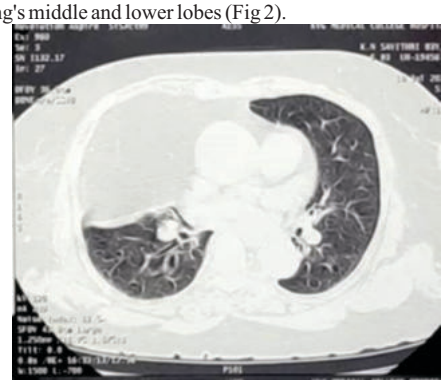

Fig 2: CECT Thorax and abdomen showing herniation of omental fat

into thoracic cavity through the defect

Given the symptomatic nature of the hernia and risk of progression, surgical intervention was planned. After thorough preoperative evaluation and optimization, the patient underwent open repair through a right thoracoabdominal approach under general anesthesia. During the surgery, a 5 × 4 cm defect was observed on the anteromedial side of the right hemidiaphragm, accompanied by herniation of the omentum (Fig 3)).

The herniated tissues were repositioned into the abdominal cavity, and the defect in the diaphragm was closed using non-absorbable interrupted sutures. A composite mesh was utilized to strengthen the repair, and the postoperative recovery was smooth without any complications. The patient was extubated on the first day after surgery and began oral feeding by the third day.

Postoperative chest radiography showed expansion of the previously collapsed lung segments. The patient was discharged on the seventh day after the surgery.

At the three-month follow-up, she indicated that her respiratory symptoms had fully resolved and that there was a notable improvement in her gastrointestinal symptoms. The follow-up CT scan revealed that the diaphragm was intact and there was no recurrence of the hernia.

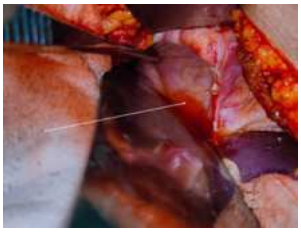

Fig 3: Intraop image showing the defect of around 5x4cm on right hemidiaphragm

DISCUSSION:

Spontaneous acquired diaphragmatic hernia is a rare medical condition that presents considerable diagnostic difficulties. The diaphragm, a musculotendinous structure separating the thoracic and abdominal cavities, can develop defects leading to herniation of abdominal contents into the thorax [7]. While most diaphragmatic hernias are either congenital or result from traumatic injuries, spontaneous hernias without any precipitating event are exceedingly rare [8]. The pathophysiology of spontaneous diaphragmatic hernias likely involves a combination of congenital weakness in the diaphragm and gradual weakening due to aging, coupled with sudden increases in intra-abdominal pressure [9]. In our case, the patient's advanced age might have contributed to age-related degeneration of the diaphragmatic tissue, predisposing her to hernia formation. However, the exact triggering event remains unclear, as she denied any episodes of severe coughing, vomiting, or physical exertion. Right-sided spontaneous diaphragmatic hernias are particularly unusual due to the protective effect of the liver [10]. Meng et al. reviewed 28 cases of spontaneous diaphragmatic hernias and found that only 19% occurred on the right side [11]. Our case adds to this limited literature on right-sided hernias and highlights the importance of considering this diagnosis even when presentation is atypical. The clinical manifestations of diaphragmatic hernias can vary greatly, from being asymptomatic and discovered incidentally to presenting acutely with issues like cardiopulmonary distress or intestinal blockage [12]. Our patient presented with primarily respiratory symptoms alongside gastrointestinal complaints, reflecting the compressive effect of the herniated omentum on the lung parenchyma and the disturbance in normal digestive function. Imaging plays a crucial role in diagnosing diaphragmatic hernias. While chest radiography may show nonspecific findings such as elevated hemidiaphragm or basilar opacity, CT scan remains the gold standard for diagnosis, with a sensitivity of 71-90% and specificity of 98% [13]. This case, the initial suspicion of pleural effusion based on chest radiography was clarified by ultrasonography and ultimately confirmed by CT scan, underscoring the importance of appropriate imaging in cases with atypical presentations. The management of diaphragmatic hernias is primarily surgical. Various approaches have been described, including transabdominal, transthoracic, or combined thoracoabdominal approaches, with the choice depending on the location and size of the defect, contents of the hernia, and surgeon's preference. We opted for a thoracoabdominal approach in our patient due to the location of the defect and to ensure adequate exposure for reduction of herniated contents and repair of the defect. The timing of surgery is crucial in diaphragmatic hernias. While emergent surgery is indicated in cases with strangulation or perforation, elective repair is appropriate for stable patients. Our patient underwent elective repair after optimization of her medical condition, resulting in a favorable outcome. The use of mesh for repair remains controversial, with some authors advocating primary repair for small defects and mesh reinforcement for larger defects [14]. We used a composite mesh to reinforce our repair due to the size of the defect and the patient's age-related tissue fragility, which might have increased the risk of recurrence with primary repair alone. Long-term outcomes after repair of diaphragmatic hernias are generally favorable, with recurrence rates reported to be less than 5% [15]. Our patient's three-month follow-up showed excellent results with complete resolution of symptoms and no radiological evidence of recurrence.

CONCLUSION:

Spontaneous acquired diaphragmatic hernia occurring without any history of trauma or surgery represents a rare clinical entity that requires a high index of suspicion for diagnosis. This case emphasizes the need to include diaphragmatic hernia in the differential diagnosis for patients who present with unexplained respiratory and gastrointestinal symptoms, even when there is no history of trauma. The right-sided presentation in our elderly patient makes this case particularly unusual. Early diagnosis through imaging and timely surgery are crucial to prevent complications like strangulation or respiratory distress. A thoracoabdominal approach with mesh reinforcement ensured successful outcomes, emphasizing the need for clinical vigilance.

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