Morgagni-Larrey Hernia: A Possible Cause of Recurrent Lower Respiratory Tract Infections

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Abstract
Morgagni-Larrey hernia is an exceedingly rare presentation of congenital diaphragmatic hernia. Despite its rarity, it is associated with significant risk of morbidity and mortality. Herein, we describe a unique case report of an elderly woman who presented with left-sided chest pain, dyspnea, and chronic history of recurrent respiratory tract infections. On the basis of her medical history, general physical examination and imaging studies, she was operated for a presumptive diagnosis of thymolipoma. However, the intra-operative findings revealed that it was an unusual variant of a diaphragmatic hernia and the hernia sac appeared through the retrosternal foramen of Morgagni. Hence we concluded that it was a Morgagni-Larrey hernia compressing the lungs and heart. Consequently, the hernia was reduced and the defect was repaired. During the postoperative period, the patient had an uneventful recovery. To conclude, the possibility of a Morgagni-Larrey hernia should be strongly considered while evaluating a patient with recurrent chest infections, dyspnea, and vague chest pain.

Introduction
Foramen of Morgagni is a triangular space in the anterior thoracic wall. It is located between the muscular fibers of the sternal and costal attachments of the diaphragm. This potential space for the development of a hernia lies just posterolateral to the sternum at the level of the seventh rib on both sides of the xiphisternum [1]. Under normal conditions, this space is filled with a variable amount of fat. Furthermore, a pleural layer covers it superiorly, whereas the peritoneum lines it from below. In the case of a Morgagni hernia, the peritoneum and the contents of the abdomen herniate through this potential weak area into the thoracic cavity [2]. They are more often right sided (90%), smaller in size, and rarest among all diaphragmatic hernias as they constitute just 3% of all the diaphragmatic hernias [3]. The Morgagni-Larrey hernia sac mostly contains the transverse colon with the omental fat. Rarely, the stomach, loops of small intestine, and liver can be present in the hernia sac [4]. As far as the clinical presentation is concerned, it is usually asymptomatic in the adult population and is mostly diagnosed incidentally from a chest X-ray performed for other etiologies of respiratory symptoms. However, some cases may have dyspnea, cough, chest pain, and obstructive symptoms. In this case report, we describe a patient who was suffering from recurrent respiratory tract infections for many years [5]. This condition remained undiagnosed for a very long period. Therefore, we are presenting this case to raise awareness among healthcare professionals regarding this rare clinical presentation of a Morgagni-Larrey Hernia. The authors hope that this study will help the junior doctors, especially surgical trainees to consider this in the differential for early diagnosis and prevention of life-threatening complications of this clinical entity.

Case Presentation
A 57-years-old female presented with complaints of recurrent chest infections. She also complained of dull, aching left-sided chest pain associated with dyspnea and orthopnea. She had no complaints of palpitations, exertional dyspnea, heartburn, jaundice, nausea, and vomiting. There was no history of a change in bowel habits and occurrence of abdominal pain. However, the patient narrated a longstanding history of recurrent lower respiratory tract infections associated with a productive cough and fever. She would seek medical care from a local doctor who used to treat her illness conservatively by prescribing antibiotics. Her symptoms remained undiagnosed for a very long period.

During the postoperative period, the patient had an uneventful recovery. To conclude, the possibility of a Morgagni-Larrey hernia should be strongly considered while evaluating a patient with recurrent chest infections, dyspnea, and vague chest pain.
cardiac borders were not well appreciated. Figure 1 shows the plain chest radiograph of this patient.

**FIGURE 1:** Posteroanterior chest radiograph showing a non-homogeneous opacity involving the left lingual segment and left lung lower lobe (marked by an arrow). Loss of silhouetting of the left heart border is also evident.

Echocardiography was also performed showing concentric left ventricular hypertrophy. There was no evidence of pericardial effusion with an ejection fraction of 60%. Chest computed tomography (CT) scan revealed a large fat density mass with internal linear strands of soft tissue arising from the anterior mediastinum and extending along the left pericardium occupying half of the left hemithorax. The mass was displacing and compressing the ipsilateral lung resulting in atelectasis of adjacent lung parenchyma and contralateral mediastinal shift. Figure 2 shows the chest CT scan of this patient.
FIGURE 2: Sagittal view of chest computed tomography scan revealing a large fat density mass arising from the anterior mediastinum and extending along the left pericardium occupying half of the left hemithorax (marked with an arrow).

A presumptive diagnosis of thymolipoma was made. Consequently, left-sided postero-lateral thoracotomy was performed. Intraoperatively, a huge globular mass was passing through a rent in the diaphragm measuring about 8 cm. It was situated at the medial end of the xiphoid process near the attachment of central tendon. This large defect in the diaphragm is shown in Figure 3.

FIGURE 3: The black arrow indicates the defect in the diaphragm, the site of the Morgagni-Larrey hernia.
The hernia sac passed anteromedial to the heart and great vessels and was pushing into the pleural cavity. Intraoperative findings are shown in Figure 4.

FIGURE 4: Intraoperative view of the Morgagni-Larrey hernia repair.

The large hernial sac containing omentum within it was present in the thoracic cavity (marked by solid black arrow). The hernial sac was also compressing the adjacent lung parenchyma (marked by unfilled arrow).

Following the confirmation of the findings, the thoracic cavity was closed after placing a left-sided chest drain. Thereafter, an upper midline laparotomy was performed to reduce the omentum back into the abdomen. The defect in the diaphragm was repaired using a synthetic polypropylene mesh. The patient had an uneventful recovery. She was discharged on the sixth postoperative day and was followed up at the intervals of two weeks, two months, and six months. During all these visits, the patient remained asymptomatic and there was no associated recurrence.

Discussion

Morgagni-Larrey hernia is a rare clinical entity which was first described by an Italian anatomist Giovanni Battista Morgagni [6]. The review of the medical literature reveals that there is confusion in the nomenclature of this type of a hernia. Studies have used the term Larrey's hernia to describe this unusual type of hernia if it occurs on the left side of the sternum, while Morgagni hernia referred to a right-sided...
their help, guidance, valuable suggestions and logistic support. We acknowledge our colleagues Dr. Asmara A. Malik, Dr. Ali Sufian, Dr. Mansoor Ali and Dr. Sajjad Yousuf for

**Acknowledgements**

All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

We acknowledge our colleagues Dr. Asmara A. Malik, Dr. Ali Sufian, Dr. Mansoor Ali and Dr. Sajjad Yousuf for their help, guidance, valuable suggestions and logistic support.

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Morgagni-Larrey hernia is a rarely encountered clinical entity, which can be the cause of recurrent lower respiratory tract infections. Therefore, this case report highlights that the possibility of Morgagni-Larrey hernia should be kept in mind when a patient presents with a chronic history of recurrent chest infections along with vague chest pain and dyspnea.
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