

Congenital Intercostal Lung Herniation Combined with an Unusual Morgagni's Hernia

Sang-Kwon Lee, M.D.*, Do-Hyung Kim, M.D.*

A 70-year-old male visited urgent care due to coughing for 1 month and left chest pain. He had no history of trauma. The initial chest computed tomography (CT) showed the 7th left intercostal lung herniation. A follow-up CT showed an intercostal lung herniation combined with a bowl herniation, which had developed due to a Morgagni's hernia. An emergency operation was performed due to the incarceration of the bowl and lung. The primary repair of the diaphragm was performed and the direct approximation of the 7th intercostal space was determined. We concluded that the defect of the diaphragm and the intercostal muscle was a congenital lesion, and the recurrent coughing was the aggravating factor of herniation.

Key words: 1. Morgagni's hernia
2. Hernia, lung

CASE REPORT

A 70-year-old man was admitted to the emergency department with a 1-month history of coughing and dyspnea. He developed a productive cough with purulent sputum, left chest wall pain, and 3 days prior to arrival ecchymosis developed on the left upper quadrant of the abdomen. He did not have a recent history of thoracic or abdominal trauma, and it was unknown if he had a history of thoracic surgery. The initial chest x-ray showed a hyperdensity in the left lower lung, an obliterated diaphragmatic border with an atelectasis, and a decreased lung volume. A computed tomography (CT) scan with contrast of the chest was obtained. The scan film showed a protrusion of the lung through the left 7th intercostal space (Fig. 1A). Therefore, he was diagnosed with a lung herniation, and a medical conservative treatment was performed.

On hospital day 10, after experiencing uncontrolled coughing, the patient complained of aggravated dyspnea and left chest wall pain. The subsequent chest x-ray showed increased hyperdensity with a gas-filled area above the left dome of the diaphragm. He also showed dullness to percussion and chest wall tenderness. On hospital day 12, a CT scan with contrast of the chest revealed herniation of the bowel and omental fat in the anterior portion of the left hemithorax (Fig. 1B).

On hospital day 13, the patient was transferred to the department of thoracic surgery and underwent an emergency operation due to the incarceration of the bowel and a parapneumonic effusion due to passive atelectasis. The operation revealed a partial agenesis of intercostal muscle, costal cartilage around the 7th anterolateral intercostal space due to the lack of developed intercostal muscle (Fig. 2A), an 8 cm defect of the diaphragm, and a herniation of the small bowel located in the anterior portion of the left thoracic cavity (Fig.

*Department of Thoracic and Cardiovascular Surgery, Pusan National University Yangsan Hospital

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Corresponding author: Do-Hyung Kim, Department of Thoracic and Cardiovascular Surgery, Pusan National University Yangsan Hospital, Beomeo-ri, Mulgeum-eup, Yangsan 626-770, Korea
(Tel) 82-55-360-2127 (Fax) 82-55-360-2157 (E-mail) yumccs@nate.com

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Fig. 1. (A) Initial chest CT shows the lung herniation in the 7th intercostal space. (B) The follow-up chest CT on hospital day 12 showed herniation of the bowel and omental fat into the anterior portion of the left hemithorax with pleural effusion in the left thoracic cavity.

2B). The primary repair of the diaphragm was performed and the direct approximation of the 7th intercostal space was determined. The patient was discharged 12 days postoperatively.

DISCUSSION

A lung herniation is defined as a protrusion of the lung beyond the normal confines of the thoracic cavity through an abnormal opening in the chest wall [1]. A condition associated with increased intra-thoracic pressure or that weakens the thoracic wall may cause a lung herniation [2]. According to a report by Goverde et al. [3], lung herniation is such a rare disease, that only about 300 patients have been reported with the disease in the world literature, and most were single case reports. Congenital lung hernias are especially rare and consist of approximately 18% of all reported lung hernias. Most congenital lung hernias are found in the supraclavicular area, whereas a lung herniation in the intercostal area is rare. The cause is due to the lack of developed intercostal muscle or costal cartilage [4].

A Morgagni's hernia is caused by a failure of fusion between the fibrotendinous portions of the sternal and the costal

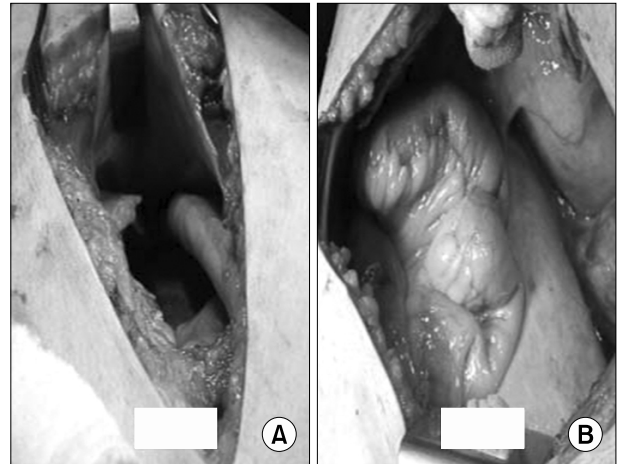


Fig. 2. Gross findings showed (A) A partial agenesis of the intercostal muscle and the costal cartilage was located around the 7th anterolateral intercostal space due to the lack of developed intercostal muscle. (B) The 8 cm defect of the diaphragm and the herniation of the small bowel were located in the anterior portion of the left thoracic cavity.

parts of the diaphragm. A Morgagni's hernia is also a rare disease. In a report by Berman et al. [5], only 15 infants and children with Morgagni's hernia were admitted over a 20 year period at the Hospital for Sick Children in Toronto. The majority of patients present with a Morgagni's hernia in the neonatal period, but the hernia may remain undiscovered until later in life. Morgagni's hernia is secondary to an incomplete development of the diaphragm in contributing to the increase of abdominal pressure; other contributing factors include trauma, severe exertion, and obesity [6].

Our patient did not have a history of trauma. We located the agenesis of the intercostal muscle and the costal cartilage, and the congenital Morgagni's hernia was located near the intercostal herniation. The discoveries serve as evidence that this case involved a congenital disorder. In conclusion, we believe that the cause of the intercostal hernia combined with the Morgagni's hernia might have been due to incomplete development of the chest wall and diaphragm. The increased abdominal pressure due to recurrent cough is what aggravated the symptoms.

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