



Case Report

Life-threatening massive empyema: A novel complication of intrathoracic omental herniation

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ABSTRACT

Intrathoracic omental herniation (ITOH) is the herniation of the omentum through the esophageal hiatus without herniation of the stomach. It is a rare disease and serious complications due to ITOH have not been reported in the literature. Here, we reported the case of 47-year old man who presented to the emergency department with dyspnea and chest pain. Enhanced computed tomography (CT) demonstrated a large retrocardiac mass and ITOH was suspected. During the observation period in the emergency department, the patient's condition rapidly deteriorated. Follow-up CT showed large parapneumonic effusion and empyema. Emergency surgery was performed and the omental sac was removed. The patient's vital signs were restored and his symptoms were relieved. He was discharged on hospital day 15 without complications. Emergency physicians should be aware that severe complications of ITOH could develop and that if the patient's symptoms and vital signs worsen, emergency surgery should be considered.

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1. Introduction

Intrathoracic omental herniation (ITOH) is a type of hiatal hernia in which omental herniation through the esophageal hiatus occurs without herniation of the stomach [1,2]. It is presumed to be due to the weakening of the phreno-esophageal membrane [3]. ITOH is notably rare and is unreported in the emergency medicine literature as there have been no cases of serious complications in ITOH patients [4–12]. We report an unusual case of ITOH patient with life-threatening complication.

2. Case report

A 47-year-old man presented to the emergency department with left lower chest pain and dyspnea. Although a mild pain had begun 3 days previously, the pain suddenly worsened, with accompanying dyspnea, 2 h before admission. The pain worsened in the supine

position and during inspiration. He had no notable medical history, recent trauma, or upper respiratory infection. His blood pressure was 150/90 mm Hg, pulse rate 113 beats/min, respiratory rate 24 breaths/min, temperature 36.2 °C, and oxygen saturation 91% on room air. His breath sounds were clear and his abdomen was soft and flat with no tenderness. There was no costovertebral angle tenderness. The white blood cell count was 11,530 μ L and C-reactive protein (CRP) level was 4.64 mg/dL (normal <0.5 mg/dL). Other laboratory tests, including urine analysis and cardiac profile, were within normal limits. Electrocardiography revealed sinus tachycardia. Chest radiography revealed cardiomegaly and left-sided pleural effusion (Fig. 1). Enhanced chest computed tomography (CT) demonstrated a large mass between the heart and thoracic vertebrae (Fig. 2). The mass was homogenous and had a fat density (−105 to −120 Hounsfield Units). The mass extended from the abdomen to thoracic cavity via the esophageal hiatus, so we suspected ITOH and consulted a thoracic surgeon who assessed the patient and planned an elective surgery. During observation in the emergency department, the chest pain and dyspnea were rapidly aggravated and fever (38.1 °C) occurred. The patient's CRP level was elevated to 30.19 mg/dL. Follow-up CT showed a sudden increase in the left-sided atelectasis and pleural effusion and the retrocardiac mass was right-deviated (Fig. 3). Since the patient's condition had rapidly deteriorated, emergency surgery was performed to reduce the omental hernia sac and repair the hiatus. Although laparoscopy was attempted,

Abbreviations: CRP, C-reactive protein; CT, computed tomography; ITOH, intrathoracic omental herniation.

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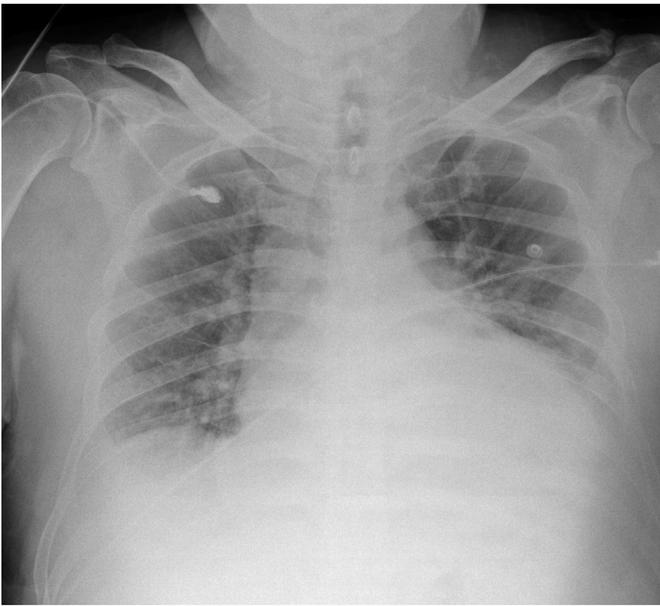


Fig. 1. Initial chest radiograph showing cardiomegaly and left pleural effusion.

laparotomy was adopted instead because of the insufficient surgical exposure caused by a large amount of fatty tissue extending into the mediastinum. About 1500 g of omental tissue was removed and the empyema, which abruptly developed just after admission, was controlled by chest tube insertion. Although the pain was considerably relieved postoperatively, drainage through the chest tube was insufficient for infection control, so thoracoscopic decortication was performed 3 days after the initial surgery. The patient was discharged on hospital day 15 without symptoms.

3. Discussion

ITOH is common at age ≥ 40 years, being rare in young patients [4]. Most patients are asymptomatic and ITOH is incidentally noted on chest radiography [4–10]. Possible symptoms include dysphagia, epigastric pain, nausea, and dyspnea. Severe ITOH complications are

unreported. To our knowledge, this is the first report of ITOH with life-threatening complications.

CT seems useful for diagnosing ITOH [2,4]. It is important for detecting 1) fatty mass continuing from the abdomen to the thoracic cavity through the esophageal hiatus and 2) omental vessels passing through the esophageal hiatus with the mass [10]. Although not seen in all patients, the midline septum might also be noted in ITOH [5]. Previously, it was difficult to identify the continuity of masses and omental vessels via CT but with recent developments in high-resolution multidetector CT technology, this difficulty has been resolved.

ITOH management is controversial [2,9]. Surgery is the mainstay of treatment but occasionally, symptomless ITOH is observed in patients. However, if the patient's symptoms or vital signs worsen as in our case, emergency surgery should be considered. Operative methods include thoracotomy, laparotomy, and laparoscopy. If the patient is diagnosed with ITOH preoperatively, an abdominal approach could aid quick recovery by avoiding an unnecessary transthoracic approach.

Although the pathophysiologic factors that led to the worsening of the patient's symptoms are unclear, we presumed the biological mechanisms underlying these abrupt symptoms were 1) the aggravated pain could have stemmed from the mechanical distension of the hiatal muscle by ITOH, 2) the dyspnea was possibly due to huge space-occupying intrathoracic tissue leading to a decreased forced expiratory volume, forced vital capacity, and total lung capacity, and 3) the uncontrolled fever and high CRP could have developed from not only strangulated fatty tissue but also from the large empyema caused by the space-occupying intrathoracic tissue.

3.1. Conclusion

If a retrocardiac mass of fat density is found, the emergency physician should consider ITOH as a differential diagnosis. Contrast-enhanced CT is useful for identifying a fatty mass passing through the esophageal hiatus, with blood vessels. Moreover, severe complications of ITOH could develop like in our patient. If the patient's symptoms and vital signs worsen, emergency surgery should be considered.

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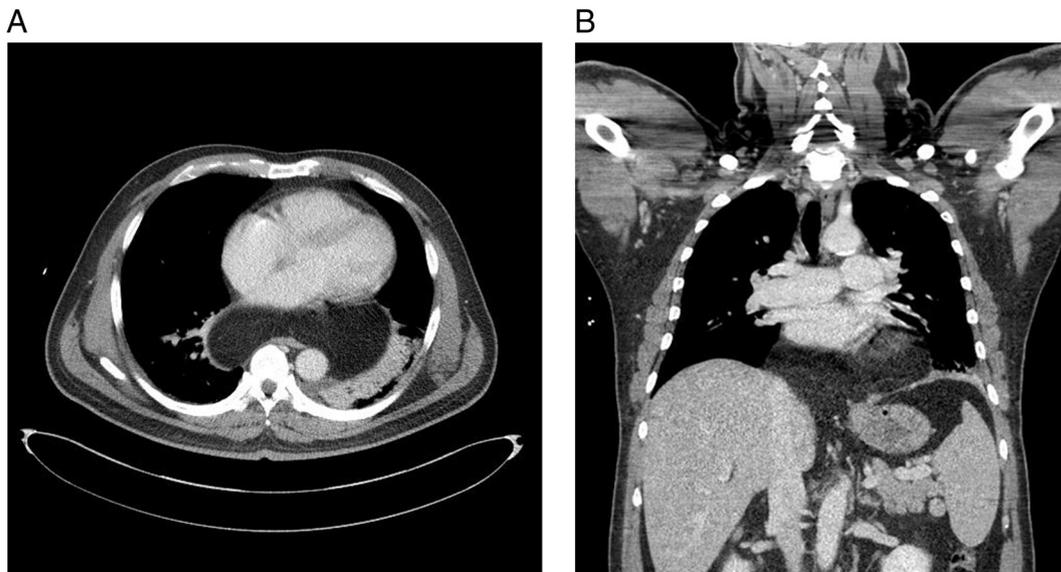


Fig. 2. Initial chest computed tomography image showing a large retrocardiac fatty mass with minimal atelectasis.

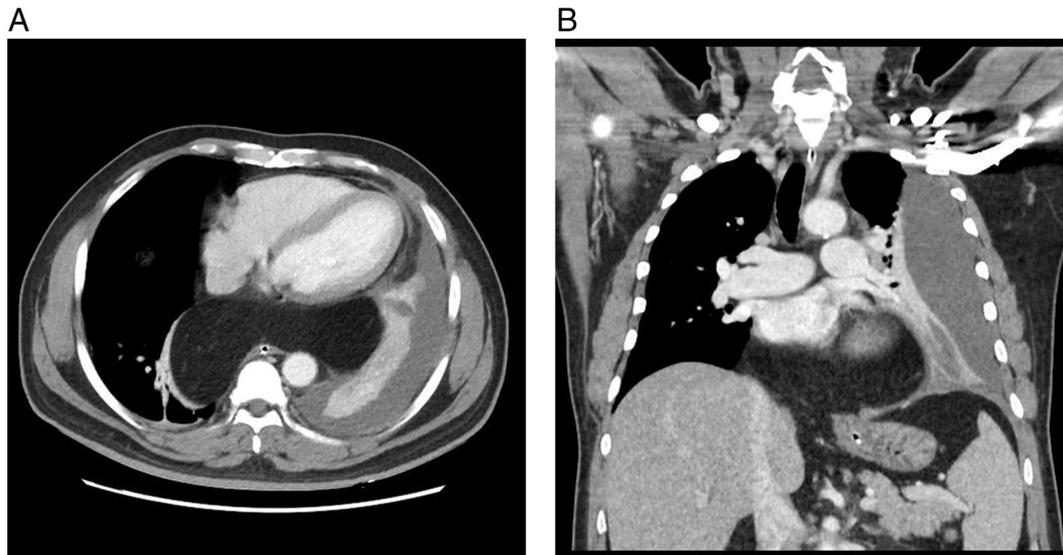


Fig. 3. Follow-up chest computed tomography revealed a large retrocardiac fatty mass with massive emphysema and atelectasis.

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