Morgagni Hernia Presenting as Heart Failure: A Case Report

Pai-Hsi Chen, Hung-Chang Liu, Wen-Chieh Huang, Chao-Hung Chen, Charng-Jer Huang

Morgagni hernia is a subcostosternal diaphragmatic hernia, and is the rarest form of disease related to diaphragmatic defects. Most Morgagni hernias are congenital, but are rarely diagnosed in childhood. Specific examinations are needed because of reducible symptoms and herniation. Surgical correction is the golden rule for cure of this complicated disease. We report a 57-year-old male patient with diabetic obesity and Morgagni hernia who presented as heart failure and acute renal insufficiency. Dramatic recovery of clinical symptoms and systemic complications occurred after surgical repair. Roentgenographic studies and operative findings are demonstrated as well. ***(Thorac Med 2007; 22: 209-214)***

Key words: Morgagni hernia, systemic complications, surgical repair

Introduction

Subcostosternal diaphragmatic hernia is the least common form of diaphragmatic hernia, accounting for 2~3% of all cases [1]. In 1769, Morgagni first described a diaphragmatic hernia which originated from the sternocostal trigone, and thus it bears his name [2]. Most Morgagni hernias are congenital diseases and are rarely detected in children. The hernia is asymptomatic in about one-third of patients and is frequently diagnosed by chest radiography. Those with compression of vital organs often show non-specific complaints, such as gastrointestinal or respiratory symptoms. In some cases, they might present with bowel obstruction or acute respiratory distress. In practice, more than half of Morgagni hernias are detected incidentally during investigation for related problems. We reported a patient with Morgagni hernia who presented as heart failure associated with acute renal insufficiency.

Case Report

A 57-year-old male patient with diabetic obesity (body mass index: 30 kg/m^2) was admitted to our hospital with progressive edema of bilateral lower legs, oliguria, general weakness and abdominal distention for 2 weeks. His physical examination showed decreased breathing sounds with dullness by percussion in the right lower chest. Blood test revealed elevated serum creatinine

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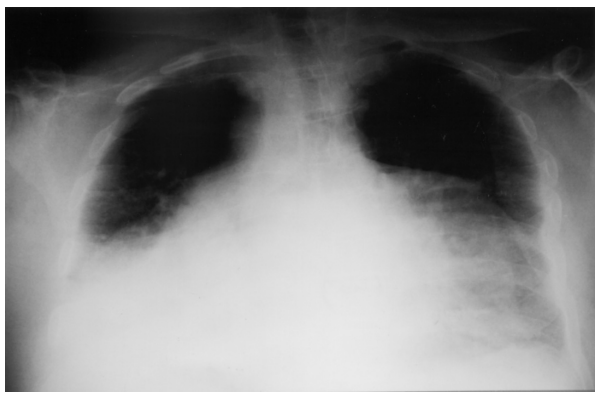
(13.3 mg/dL) and azotemia (blood urea nitrogen, 121 mg/dL). Chest radiography showed a large radiopacity in the right lower lung field with bowel gas in the thorax (Figure 1). Computed tomography of the chest demonstrated a large occupying lesion with the colon and omentum in the right-side hemi-thorax (Figure 2). Therefore,



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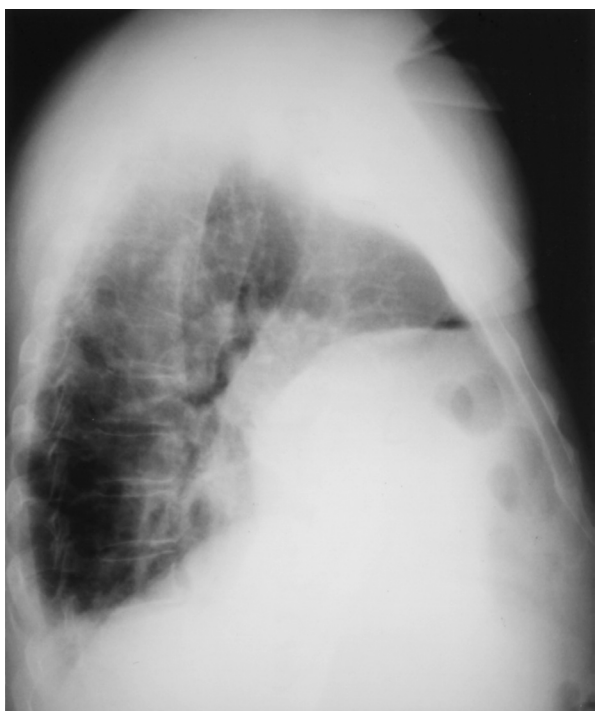

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Fig. 1. A. Posteroanterior radiography shows large opacity in the right lower lung field. B. Lateral view reveals the opacity at the retrosternal area with bowel gas.

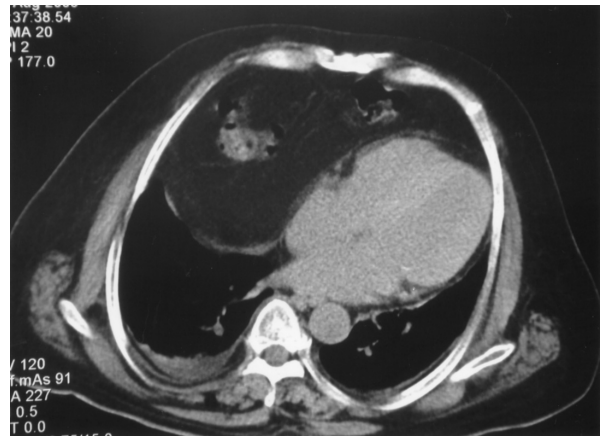


Fig. 2. Computed tomographic scan shows a right retrosternal hernia containing both omentum and colon. The heart is compressed by the hernia sac and shifts to the left side of the thorax.

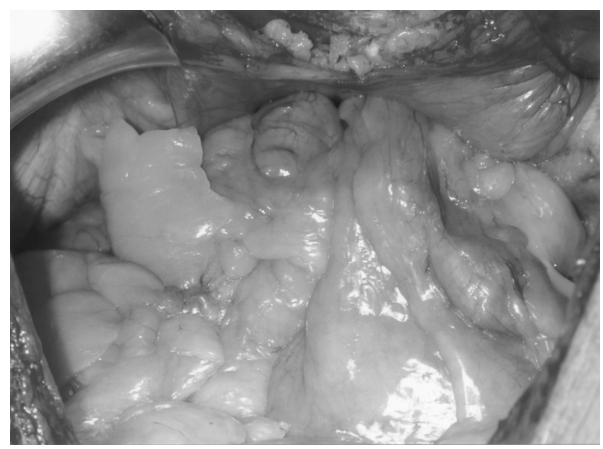
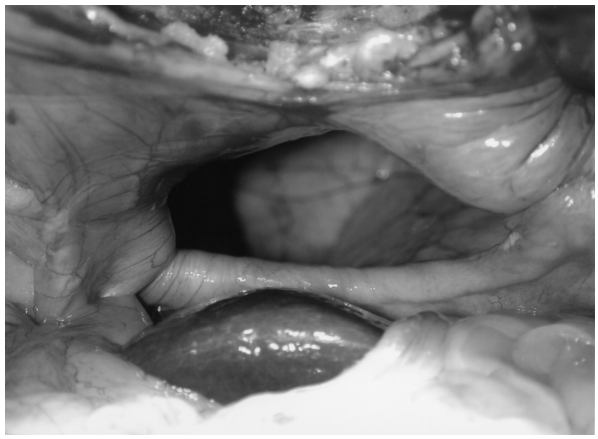


Fig. 3. Through a transabdominal approach, the omentum and transverse colon were noted in front of the liver and pulled into the right thorax.

a diaphragmatic Morgagni hernia with hemodynamic suppression was diagnosed.

The patient received surgical intervention with an upper midline laparotomy. Operative findings showed the hernia with a sac filled with the omentum and colon (Figure 3). The incarcerated and herniated contents were reduced smoothly, and the hernia sac and diaphragmatic defect were repaired with interrupted nonabsorbable stitches (Figure 4).



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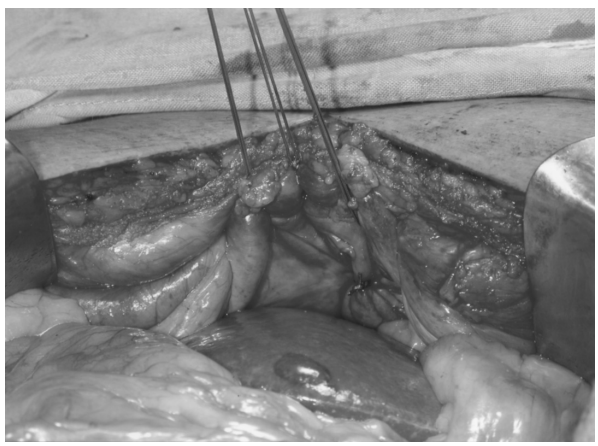

(B)

Fig. 4. A. After reducing the viscera, the defect in the diaphragm was noted and the sac was found in the right thorax. B. The sac was retained and the defect was repaired with interrupted sutures.

The postoperative course was uneventful. Dramatic improvement of the heart failure was noted, including an adequate urine output and no presence of edema. The levels of serum creatinine and blood urea nitrogen were all back to normal (0.7 mg/dL and 17 mg/dL respectively), and the patient recovered well about 10 days after operation.

Discussion

Morgagni hernia is an unusual defect of the anterior part of the diaphragm, and accounts for about 1% to 6% of surgically-removed diaphragmatic hernias. It is located anteromedially on either side of the junction of the septum transversum and thoracic wall [3], and is caused by unsuccessful fusion between the fibrotendinous portions of the sternal and costal parts of the diaphragm [4]. Such failed fusion creates weakness in the diaphragm and is later stretched loose by the rapid rise in intra-abdominal pressure, which gives rise to a hernia. This is the reason that Morgagni hernias are usually not found in children [5]. About 90% of Morgagni hernias are located on the right side, 2% are located on the left, and 8% are bilateral [6-7]. The lesser incidence of left-side Morgagni hernias is due to cardiac compression forming a natural barrier on the sternocostal trigone [8].

Pathogenetically, a Morgagni hernia is caused by incomplete development of the diaphragm. Other secondary factors, including trauma, stressful effort, and obesity, may also contribute to formation of the Morgagni hernia, and these factors are thought to be caused by the increased abdominal pressure [9]. The typical presentations are abdominal pain, intestinal obstruction, chest tightness and/or shortness of breath [5]. In complicated conditions, as in the current case, the patient presents with heart failure and non-specific abdominal distention. We suspected that the huge herniated occupancy induced compression of the heart and later, unstable hemodynamics. Reviewing the literature, only 1 report has ever mentioned a similar condition [10].

Due to the non-specific presentations of Morgagni hernia, it is difficult to diagnose clinically. Most Morgagni hernias are diagnosed by chest

radiography, with evidence of gas-filled bowel loops or a soft tissue mass above the right dome of the diaphragm [7, 11]. However, if the herniated contents are reversible, the radiography may sometimes be normal. Morgagni hernia can also be mistaken as a lung collapse, pneumonic consolidation, pericardial fat pad, pericardial cyst, or mediastinal mass. Specific studies, such as bowel contrast roentgenography, ultrasound, computed tomography, and magnetic resonance imaging, can contribute to the diagnosis [12-14].

Surgery is the only way to treat the herniated viscera of Morgagni hernia. The management of Morgagni hernia is controversial in asymptomatic patients. However, for the prevention of incarceration and related complications, surgery should be considered in all patients when the diagnosis is made [4]. Both transabdominal and transthoracic approaches have been recommended [8, 15]. Chin et al advised a transthoracic approach because it provided a wide exposure and easy repair of the hernia sac [4]. However, an abdominal approach would be suggested if bilateral or complicated herniation was apparent [15]. In patients whose hernia presents as a homogenous density on X-ray, or when the differential diagnosis with a chest tumor is difficult, the thoracic approach is preferable, as it may provide better preparation and reduction of the herniated liver or appropriate management of an unsuspected chest lesion [4]. Recently, endoscopic surgery with primary repair with or without mesh has been reported as a safe and effective option for treatment of Morgagni hernia [16-19].

Conclusion

Morgagni hernia is a rare type of diaphragmatic hernia. Its diagnosis is often made by imaging studies. The value of surgical repair is in preventing the incarceration or strangulation of the herniated viscera, and to relieving hemodynamically compressive syndromes, such as heart failure and cardiac tamponade. Transabdominal or transthoracic approaches in surgery are recommended, and either thoracoscopic or laparoscopic repair may be another choice of management.

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以心臟衰竭表現之 Morgagni 橫隔疝氣一病例報告

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Morgagni 疝氣唯一少見之橫隔膜缺損疾病，大多數病因為胚胎時期橫隔膜封閉不全所導致的橫隔缺損，少數病患為後天因素所造成，例如：創傷、肥胖等。此病的臨床表現，多半以呼吸道和腸胃道的癥狀為主。也由於症狀不明顯，且缺乏特異性，因此在診斷上添加了困難度。一般來說，此疾病常因影像學檢查而偶然發現。我們在此報告一個 57 歲的肥胖男性，因出現心衰竭併急性腎衰竭入院求診。在常規的胸部影像學檢查中發現右下肺野大區塊之不透亮陰影；胸部電腦斷層掃瞄確立 Morgagni 疝氣之診斷，且心臟因為疝氣的存在而造成明顯的左側偏移。病患在接受開腹手術修補 Morgagni 疝氣後，其腎衰竭及心衰竭症狀皆獲得顯著的改善。我們回顧並整理過去的相關文獻提出此報告。*(胸腔醫學 **2007; 22: 209-214**)*

關鍵詞：Morgagni 疝氣，全身性併發症，外科修復

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