BRIEF REPORT

Unusual Presentation of Morgagni Hernia in an Adult

Abstract

A 48-year-old female with a history of asthma presented with one-week symptoms of productive cough, shortness of breath and fever. Her chest X-ray revealed dense opacity on the right cardiac silhouette. Despite antibiotics, the mass persisted, and CT of the chest was performed, which was reviewed at the referral center and confirmed a Morgagni hernia.

Key words: Morgagni hernia, Septum transversum, Pleuroperitoneal membranes, Consolidation, Congenital diaphragmatic hernia.

Introduction

Morgagni hernia is the rarest of the 4 types of congenital diaphragmatic hernias, with an incidence of 3%.

Usually, it occurs in the right side in the anterior mediastinum and is due to failure of fusion of the sternal and costal portions of the diaphragm. Although the origin of this hernia is congenital, symptoms usually do not develop until mid-life or later.

Case Report

A 48-year-old obese Caucasian female with a history of morbid obesity and asthma presented with productive cough,
shortness of the breath and subjective fever over the preceding week in October 2010. Patient reported no orthopnea, PND, nausea, vomiting or abdominal pain. Her physical examination was remarkable for morbid obesity, slight respiratory distress, with RR of 22/min and crackles in the right lower lung lobe. Her chest X-ray revealed a round, dense area 5 cm in diameter along the right border of the heart with possible infectious consolidation. Hence, empiric treatment with an oral macrolide was started. A comparison film done in December 2009 was retrieved from another hospital. The dense opacity was present in the previous study as well. CT of the chest had been recommended after the previous study, but it was never accomplished. CT of the chest was performed at our community hospital, and it revealed a fat pad, containing a soft tissue central core, adjacent to the right cardiac border. To confirm the CT finding, the patient was referred to the nearest university medical center. CT film reviewed there revealed a fat-containing Morgagni hernia. Surgical referral was made for elective repair of the hernia, and the patient is still on the waiting list for repair.

**Literature Review**

A PubMed search using the MeSH term “Morgagni Hernia,” with limits that included “Humans,” “English” and “any date,” generated a total of 255 relevant case reports. Some of the articles relevant to our case were then reviewed.

Subcostosternal diaphragmatic hernia is an uncommon form of diaphragmatic hernia; therefore, only a few clinical series are reported in the literature.
Horton et al performed a literature search in 2007 involving 298 patients, of whom 62% were women, with the average age of presentation 53 years. In 91% the hernia was right-sided, and in 5% on the left. Predisposing conditions, including pregnancy, trauma, obesity, chronic constipation and chronic cough, were present in 41% of the cases. The most common presentations were pulmonary symptoms in 36% of patients, pain or pressure in 37%, obstruction in 20%, with 28% of patients asymptomatic. The diagnostic studies used most frequently to evaluate were chest X-ray (93%), followed by CT (47%), contrast enema (24%), upper GI study (23%), upper GI endoscopy (8%) and MRI (5%). Contents of the hernial sac were omentum in 31% of study patients, colon and omentum in 29%, stomach 15%. In another review of 263 Japanese patients, Iso et al found Morgagni hernia occurred more often in women than in men. In 77.2% of cases the hernia was right-sided, and 32.3% of patients were asymptomatic. Hernial contents included greater omentum (42.1%), transverse colon (36.5%), small intestine (7.3%), liver (6.5%) and stomach (5.3%); 6.5% of patients presented with obstruction or perforation of the intestine.

In another study published by the Mayo Clinic in 1966, 90 patients were treated for Morgagni hernia. Mayo reported 70% of patients were female, 90% of hernias were right-sided, and the most common content of the hernia was omentum, with 60% containing transverse colon and 12% containing stomach. Only 28% of these patients were symptomatic, their symptoms involved upper abdominal discomfort, fullness, bloating, vomiting or bouts of large bowel obstruction. The diagnosis
was made by chest X-ray, with or without contrast gastrointestinal studies. Preoperatively, 70% of the cases were diagnosed as foramen of Morgagni hernia.

**Discussion**

In 1769, Giovanni Morgagni first described the substernal herniation of abdominal contents into the thoracic cavity, based on observations made during autopsy examinations. The diaphragmatic defect described by both Morgagni and Dominique Larrey (Napoleon’s chief surgeon) is a triangular space between the muscle fibers of the diaphragm that originate from the xiphisternum and the costal margin and insert on the central tendon of the diaphragm. The internal mammary artery passes through this space as it becomes the superior epigastric artery with its associated vein and lymphatics. The diaphragm itself develops between the 4th and 10th weeks of prenatal life from the septum transversum, pleuroperitoneal membranes, mesoesophagus and muscular components of body wall. Congenital defects in the subcostosternal region can result in direct herniation of abdominal contents into the thoracic cavity. Herniation of abdominal contents is typically caused by an increase in intra-abdominal pressure secondary to trauma, pregnancy, or obesity. The contents of the hernia usually contain omental fat, but a larger hernia may contain transverse colon, liver, stomach or small intestine. Space-occupying lesions of the anterior mediastinum, such as pleuropericardial cysts, pleural mesothelioma, pericardial fat cushion, mediastinal
lipomas and diaphragmatic tumors, as well as cysts, thymoma and front thoracic wall tumors, should be considered in the differential diagnosis. Detection of fine linear or curvilinear opacities within the fat, representing the omental vessels, as noted in our patient’s presentation, is very characteristic on chest CT. The majority of Morgagni hernias are right-sided, because of the protection provided by the pericardial sac on left side. Omental fat herniation through the esophageal hiatus or through an acquired diaphragmatic defect is more commonly seen posteriorly in the left hemithorax.

Typical symptoms associated with this hernia include shortness of breath, cough, chest tightness, post-prandial emesis, recurrent pneumonia, gastroesophageal reflux disorder, dysphagia, abdominal cramping, distension and non-specific abdominal pain, among others. We assume the Morgagni hernia in our patient probably led to some right lower lobe atelectasis that developed into pneumonia. We found only one case report associated with asthma in our MeSH search in PubMed, which, in that case, was cured by repair of the hernia. Our patient is also of interest in regard to whether her asthma is hernia-related or due to other etiology. This will be confirmed after the surgery. This hernia has also been reported in association with other congenital malformations, including congenital heart diseases, chest wall defects, intestinal malrotation and such chromosomal anomalies as Down’s syndrome.

CT scan has better sensitivity and specificity than chest X-ray in the
diagnosis. With CT scans facilitating preoperative diagnosis, the surgical repair can be performed through the preferred transabdominal approach, thereby avoiding the potentially more morbid transthoracic approach. Prompt surgical repair is paramount in managing this hernia, in order to avoid possible unnecessary patient morbidity due to incarceration, strangulation, gastric volvulus, linear gastric ulcers (Cameron ulcers), extra-pericardial tamponade, dyspnea, pulmonary collapse and syncope secondary to left atrial compression, among other complications.

Conclusion

Foramen of Morgagni is a rare congenital diaphragmatic hernia which is most often detected incidentally on X-ray as an asymptomatic anterior mediastinal mass. The family physician should be aware of signs and symptoms associated with a Morgagni hernia. CT is the gold standard for confirmation and guides the surgical approach. Once diagnosed, these hernias should be referred for surgical repair, in order to prevent complications.

References


3. Horton JD, Hofmann LJ, Hetz SP. Presentation and management of Morgagni hernias in adults: a review of


Fig. 1: Chest X-ray PA view showing mass along the right cardiac silhouette

Fig. 2: Lateral chest X-ray showing opacity invading costodiaphragmatic recess
Fig. 3: CT chest with contrast showing bowel, omental fatty tissue in the right hemithorax, arrow showing mesenteric vessel.