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CLINICAL VIGNETTE

Atypical Chest Pain in a Patient with Morgagni Hernia

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Case Report

A 30-year-old gentleman with GERD presented to an outside Emergency Department with 1-month history of shortness of breath and chest discomfort. The patient reported that his dyspnea worsened on the day of his presentation, and it was associated with new, pleuritic, and right-sided chest pain and heaviness. He noted recent weight gain and fatigue. He denied cough, fever, chills, recent trauma, or prior surgeries. He also denied orthopnea, paroxysmal nocturnal dyspnea, lower extremity edema, palpitations, dizziness, or syncope.

He smoked 1/4 pack per day for ten years, but quit 2 months prior. He drank alcohol occasionally and 2 caffeinated beverages per day. His family history was notable for father with ischemic heart disease status post-cardiac transplant.

In the outside Emergency Department, his vital signs and physical exam were unremarkable. He had no significant lab abnormalities, and the EKG was unremarkable. His chest x-ray was abnormal, showing a distorted cardiac silhouette secondary to a “mass” in the right heart border. Chest CT (non-gated) showed prominent right-sided epicardial fat, which was compatible with a 10 cm x 9 cm x 6 cm lipoma. The patient was referred to a cardiothoracic surgeon.

The next day, the patient presented to our cardiology clinic. He underwent cardiac MRI, and he was diagnosed with a right diaphragmatic hernia, Morgagni hernia. He had herniation of omental fat into the right cardiophrenic angle, exerting mild pressure on the right ventricle.

He subsequently underwent laparoscopic surgery with repair of the right diaphragmatic hernia with a mesh along with nissen fundoplication. He did well postoperatively with resolution of his dyspnea, chest discomfort, and acid reflux.

Background

Morgagni hernia is a rare congenital diaphragmatic hernia (CDH) discovered by Giovanni Battista Morgagni in 1761¹. The incidence of CDH is 1 in 5,000, and Morgagni hernia composes about 2-3% of patients with CDH^{1,2}. Morgagni hernia occurs on the right side in approximately 90 percent of the cases, and it is located in the anterior mediastinum¹. Nevertheless, it can occur on the left side or bilaterally¹. It is also known as the anterior diaphragmatic defect, retrosternal, or parasternal hernia¹. It is more common in women (61%) with the average age of 58-years-old^{1,3}. Approximately 50-60% of individuals have isolated CDH, but the rest of individuals may have additional abnormalities, including structural malformations, chromosomal abnormalities, or genetic disorders. Cardiac abnormalities and complex congenital heart disease may occur, including dextrocardia, ventricular septal defects, vascular rings, coarctation of the aorta, and anomalous pulmonary venous return. Patients with concomitant congenital abnormalities are often symptomatic at birth, which is rare for isolated Morgagni hernias⁴.

Etiology

Congenital diaphragmatic hernia occurs due to absent or incomplete diaphragmatic muscularization^{4,5}. Morgagni hernia can be associated with obesity, trauma, weight lifting, chronic constipation, chronic cough or other causes that increase intraabdominal pressure^{1, 2}. In adults, the hernia usually contains omental fat or transverse colon, and less often, it contains liver, stomach, and intestines^{1,2}.

Diagnosis

Symptoms depend on the size and content of the morgagni hernia¹. Adult patients are usually asymptomatic, but may present with shortness of breath, cough, sternal pain, multiple pulmonary infections, nausea, vomiting, post-prandial distension, constipation, diarrhea, abdominal discomfort, gastric volvulus, splenic volvulus, strangulation, and/or large bowel obstruction^{1- 3}. On

auscultation exam, one may hear decreased breath sounds or bowel sounds on lung exam.

Morgagni hernias are often incidentally found on chest X-rays as a soft tissue density in the right cardiophrenic angle². Further radiographic imaging may improve delineation of the abnormality and understanding of the organs involved. Chest radiograph, barium studies, ultrasound, CT and MRI may be helpful. In our case, cardiac MRI with cardiac-gated images offered a better characterization of this abnormality and showed that it was extrinsic to the heart.

Management

Whether a patient is symptomatic or not, surgical repair of the morgagni hernia should be considered given risk of strangulation or incarceration of abdominal organs^{1,2}. Currently, there are no randomized studies to compare conservative management versus surgical intervention. Surgery is usually considered in order to avoid future morbidity^{6,7}. On the other hand, conservative management is considered for those who are at high operative risk ,and it may include proton pump inhibitors.²

There are various surgical approaches to repair morgagni hernias. Minimal invasive approach and laparoscopic technique have been shown to be effective and safe, and are associated with shorter hospital stay and quicker recovery⁵⁻⁷. At times, surgical repair may entail transthoracic and/ or transabdominal approach⁷. In complicated situations such as strangulation, incarceration, or peritonitis, transabdominal approach may become mandatory.

Conclusion

Morgagni hernias are uncommon in the general population. Individuals with morgagni hernias are usually asymptomatic in adulthood. The diagnosis of morgagni hernia often starts with incidental findings on the chest x-ray. Chest x-ray findings depend on

the herniated organs into the thorax, and these findings may include unidentified density in the right cardiophrenic angel to gas-filled loops of bowel within the chest cavity. In order to further characterize the abnormality, additional radiographic testing maybe considered in the diagnostic workup. Due to risk of future complications, prompt surgical repair should be considered to avoid unnecessary future morbidity. Minimally invasive approach and laparoscopic surgery have been shown to be effective in treating patients with morgagni hernias.

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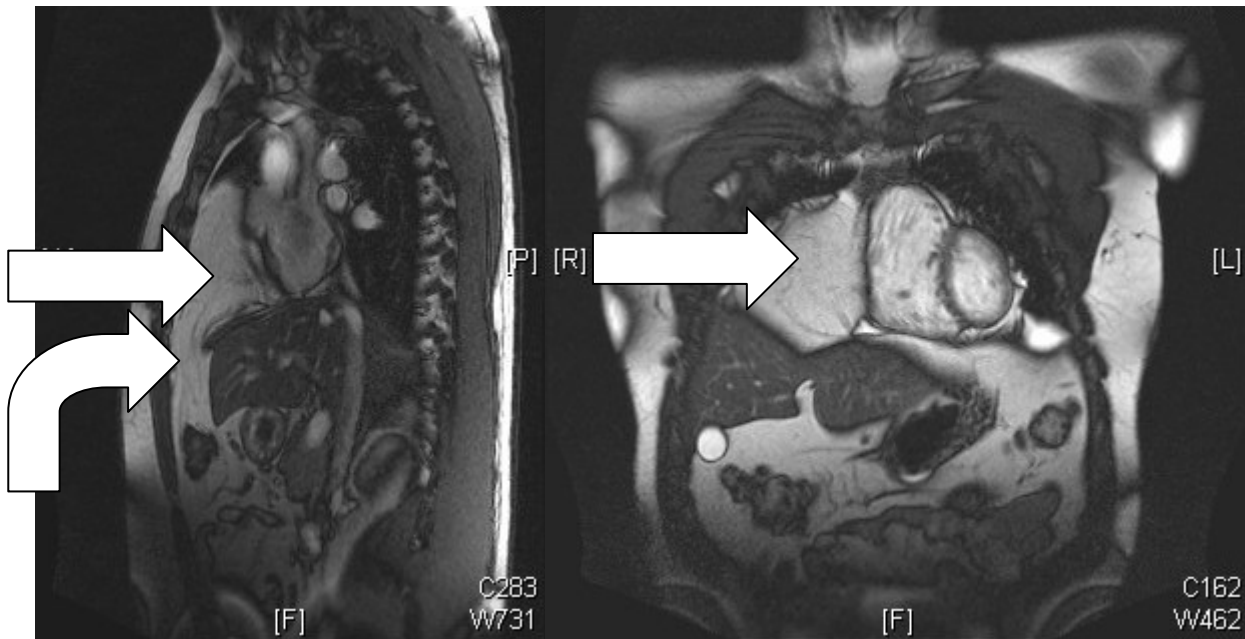


Figure 1a.

Figure 1b.

Figure 1a and 1b. MRI of 30-year-old male with history of GERD presenting with shortness of breath and pleuritic chest pain with a Morgagni Hernia (curved arrow) with herniation of omental fat into the right cardiophrenic angle, appearing as a bizarre mass (thick arrow) adjacent to the right side of the heart.