A hernia of Morgagni (also called hernia of Morgagni-Larrey) is a congenital herniation of abdominal contents into the thoracic cavity through a retrosternal diaphragmatic defect. The Morgagni hernia can create uncertainty in its diagnosis and difficulty for subsequent treatment. If after clinical examination and x-ray we suspect the hernia, computed tomography imaging should be the desired imaging method to confirm the diagnosis. Surgery is the only definitive treatment. When a patient presents signs and symptoms of incarceration or strangulation, emergency surgery is required. We report the first life-threatening case of an association between a hernia of Morgagni and a mediastinal lipoma. We present an adult patient with mediastinal lipoma and a right incarcerated hernia of Morgagni with engagement of the stomach, the duodenum and the transverse colon, successfully treated without complications. To our knowledge, this is the first report of an association between those two rare entities in an acute setting. We discuss the differential diagnosis and physiopathology of the condition, referring to published reports.

Key words: morgagni, hernia, mediastinal lipoma

Introduction

Morgagni hernia is a rare condition, characterized by a congenital herniation of abdominal contents into the thoracic cavity through a retrosternal diaphragmatic defect. Even fewer are patients affected by Morgagni hernia that have an acute presentation. Mediastinal lipomas are also rare entities: they are well-circumscribed mesenchymal tumors that originate predominantly from anterior mediastinal adipose tissue.

In this case report, we describe an adult patient presenting with acute intestinal obstruction resulting from a right incarcerated retrosternal Morgagni hernia and a mediastinal lipoma.

Case

A 66-year-old woman presented to the emergency department with a 7-day history of worsening abdominal pain, nausea, vomiting and constipation. She was not under any therapy. She had no previous bowel surgery. She had no family history of bowel malignancy. Two years before, an x-ray (Fig. 1) and a computed tomography (Fig. 2A and 2B) of the chest and abdomen showed a mediastinal fat-containing mass, measuring about 12 cm in diameter. On examination, she was dehydrated but stable. Her abdomen showed distention, tenderness in the upper quadrants and decreased bowel sounds. Respiratory sounds were diminished at the right basal region on auscultation.
Routine complete blood count (CBC) and blood biochemical analyses were remarkable only for a white blood count of 12,800 /mL (with 88% neutrophils). Chest and abdominal radiographs suggested diaphragmatic hernia because of air-fluid level and non-homogeneous opacity in the mediastinum and right hemithorax and dilated bowel loops in the abdomen (Fig. 3). Computed tomography (CT) scan of the chest and abdomen confirmed a homogeneous mass of fatty density that was adhering closely to the right anterior diaphragmatic hernia (Morgagni hernia) containing the gastric antrum, proximal duodenum, and transverse colon consistent with gastro-duodenal obstruction (Fig. 4A and 4B). A laparotomy was performed. During the operation, an incarcerated knuckle of the transverse colon, the stomach and duodenum was found in the hernia of foramen of Morgagni. Moreover, a mediastinal mass of fatty tissue was found to have adhered closely to the sac of the hernia. The contents of the hernia were replaced back into the abdominal cavity, the fat-containing mass was excised, and the defect was closed. Pathological examinations of the tumor lead us to diagnose mature lipoma. The patient recovered uneventfully. She has been fairly well during her two-year follow-up, as also confirmed by an x-ray of

Fig. 1 X-ray of the chest 2 years before the acute presentation.

Fig. 2 CT scan of the chest 2 years before the acute presentation. A: coronal CT scan. B: sagittal reformatted CT scan. The fat-containing mass is entirely in the mediastinum (arrow). CT, computed tomography.
Hernia of Morgagni and Mediastinal Lipoma

Morgagni hernia was first described by Giovanni Battista Morgagni in 1769, as a diaphragmatic hernia that originated from the sternocostal trigone. Obese women are more susceptible in developing Morgagni hernia, and it is more commonly found on the right side of the diaphragm. In adults, the majority of hernias of Morgagni are asymptomatic or present with nonspecific symptoms, such as nausea, vomiting or abdominal discomfort. In rare cases, Morgagni hernia presents itself acutely, with symptoms of bowel obstruction or strangulation, and it

Fig. 3  X-ray of the chest at the moment of the acute presentation.

Fig. 4  CT scan of the chest at the moment of the acute presentation. A: Coronal CT scan: the relationship among the mediastinal lipoma and the incarcerated colon (star). B: Sagittal reformatted CT scan: the relationship among the mediastinal lipoma and the incarcerated gastric antrum (white arrow) and among the mediastinal lipoma and proximal duodenum (black arrow).

discussion

Morgagni hernia was first described by Giovanni Battista Morgagni in 1769, as a diaphragmatic hernia that originated from the sternocostal trigone. Obese women are more susceptible in developing Morgagni hernia, and it is more commonly found on the right side of the diaphragm. In adults, the majority of hernias of Morgagni are asymptomatic or present with nonspecific symptoms, such as nausea, vomiting or abdominal discomfort. In rare cases, Morgagni hernia presents itself acutely, with symptoms of bowel obstruction or strangulation, and it
happens more frequently in children. Thoracic CT identifies the specific herniated organs, and it can be performed effectively also in emergency situations. Surgery should be considered in all cases because the Morgagni hernia is likely to induce strangulation. Transabdominal approach would be desirable in the acute settings of complex cases. Prognosis after surgery is generally good, and recurrence of this condition is very rare.

A routine chest x-ray that was taken two years before admission of the patient showed a mediastinal mass. In this case, differential diagnosis should be made between pleuroperticardial cyst, lipoma, mesothelioma, pericardial fat mass, diaphragmatic cyst, thymoma and diaphragmatic hernias. Diagnosis of mediastinal lipoma was made by a CT scan of the chest and abdomen. Two years later, when the patient presented with acute abdominal pain, CT scan showed a mediastinal lipoma and a Morgagni hernia containing incarcerated gastric antrum, proximal duodenum, and transverse colon. Hasumi et al. described a lipoma originating from the retroperitoneal fatty tissue under the diaphragm and herniating into the mediastinum through a foramen of Bochdalek. Ichihashi et al. reported an asymptomatic case of Morgagni hernia composed of hypertrophic adipose tissue in the falciform ligament. Montori et. and Arullani et. in 1964 reported 6 cases of lipoma localized in Morgagni’s foramen, named pre-hernial lipoma, which they described as the first step to the formation of a Morgagni hernia. Recently, a case of Morgagni hernia found after removal of mediastinal pericardial tumor was reported.

It was possible to detect a large mediastinal lipoma before the herniation of the abdominal organs. This allowed us to affirm that the lipoma was originally mediastinal (Fig. 2A) and not of peritoneal origin and that the herniation developed eventually. This association can be explained in two ways: the lipoma could have been a result of hypertrophy of the pericardial adipose tissue and could have a predisposing function of “stretching” the diaphragm and favoring the formation of hernia gap. On the other hand, the lipoma and the hernia of Morgagni could have a common pathogenesis, for instance, a disembirogenetic one.

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References