Diaphragmatic hernia

Report of two cases, classification, and review of literature

Ann. Ital. Chir., 2016 87: 422-425
pii: S0003469X16025963

Luca Napolitano*, Mathew Waku**, Annunziata Di Fulvio**, Gustavo Maggi**, Franco Ciarelli**

**Unit of Patologia Chirurgica, "G. d'Annunzio" University, Chieti, Italy*
***Unit of Chirurgia, "Ospedale Civile S. Massimo" Penne (Pescara), Italy*

Diaphragmatic hernia. Report of two cases, classification, and review of literature

Morgagni-Larrey hernia is uncommon congenital disease in the adults and presents with mild to severe clinical symptoms. In literature, about 80% of Morgagni -Larrey hernia are found on the right side of the chest cavity and have usually a peritoneal sack. Only 2-3% of patients at birth are symptomatic and therefore eligible for urgent surgery. Less severe forms of the disease are characterized by persistent epigastric and subcostal pains sometimes associated with vomiting and are frequently mistaken for dyspeptic disturbances.
We present two case reports; the first one is a patient of 74 years who presented with persistent epigastric pain, vomiting, slight to moderate dyspnea on exertion associated with tachycardia, tachypnea and dyspeptic symptoms. Such symptoms have been going on for the last 6 months. The second patient is a 90 year old woman who was admitted in our ward for abdominal pain and distension associated with vomiting. In both cases a Morgagni-Larrey diaphragmatic hernia was discovered by using esophagogastroduodenoscopy, gastrographyn swallow and CT scan in the first case and only CT scan in the second one.

KEY WORDS: Morgagni-Larrey hernia, Radiological investigations, Symptoms in adults, Surgical approach

Introduction

The diaphragm is a dome-shaped muscular structure [1] that divides the chest cavity from the abdominal cavity. It plays a vital role in breathing. Diaphragmatic hernia is the dislocation of abdominal contents into the chest cavity through existing anatomical defects found on the wall of the diaphragm [2], in some cases facilitated by factors that increase endo abdominal pressure. The herniation of abdominal contents into the chest cavity can cause severe epigastric discomfort, dyspnea or intestinal obstruction [3]. These defects can be of congenital or traumatic origin.

Diaphragmatic hernia is uncommon disease in the adults and usually presents with mild to severe clinical symptoms [4]. In some cases it is asymptomatic and can only be discovered accidentally during radiological investigation tests of the chest done for other reasons [5]. It can be classified under three categories according to etiopathogenesis [6].

Congenital diaphragmatic hernias (CDH). These are caused by lack of complete closure of the diaphragm in the early stages of development of the fetus [7] and are divided in three sub groups.

Postero-lateral diaphragmatic hernia; this was described for the first time by Bochdalek [8]. The abdominal contents herniate into thoracic cavity through the foramen

Pervenuto in Redazione Maggio 2016. Accettato per la pubblicazione Luglio 2016
Correspondence to: Prof. Luca Napolitano, U.O.C. Patologia Chirurgica, "G. d'Annunzio" University, Via dei Vestini 31, 66100 Chieti, Italy (e-mail: lmnapoli@unich.it)

of Bochdalek found on the posterior part of the diaphragm and becomes immediately symptomatic few days after birth. Common symptoms consist of sever dyspnea, cyanosis due to aplasia and/or extreme dislocation of the lungs. These patients usually require urgent surgery to reduce the hernia.

Antero-lateral diaphragmatic hernia; first described by Morgagni in 1761, one of the abdominal contents finds its way through a weak point between the sternum and the ribs. In literature, about 80% are found on the right side of the chest cavity and have usually a peritoneal sack [9]. Only 2-3% of patients diagnosed at birth are symptomatic and therefore eligible for urgent surgery [4] and less severe forms of the disease are characterized by persistent epigastric and subcostal pains sometimes associated with vomiting and are mistaken for dyspeptic disturbances [10].

Other rare forms of CDH hernias are; central phrenic hernias, hernias originating from hemi-diaphragmatic agenesis and lumbar-costal hernia of Boyd. The latter is a posterior hernia delineated by the quadrate muscle of the loins. It mostly contains fat tissues.

Acquired diaphragmatic hernia; This is a dislocation of abdominal contents into chest cavity through small pre-existing foramen in the diaphragm usually facilitated by factors that increase endo abdominal pressure such as cough, pregnancy, obesity. They can be classified into two groups according to the structures they pass through in:

– the so called exceptional hernias. These include aortic hiatal hernias and hernia of the inferior vena cava foramen;

– esophageal hiatal hernias. This is the herniation of gastric fundus into the chest cavity through diaphragmatic hiatus and are divided into 3 types; branchy esophagus hernia, Para esophageal hernia and sliding hernia. Anatomically, in type 1 and 3 the lower gastro-esophageal sphincter is dislocated into the chest cavity as well and therefore allow gastric contents to return into the esophagus. Symptoms are usually attributed to gastro-esophageal reflux, characterized by epigastric pain, reflux esophagitis, ulcers, hematemesis, melena, heart burns;

– Traumatic diaphragmatic hernia. Frequent causes are blunt or penetrating trauma into the thoracic or abdominal cavities and rupture of the diaphragm by abrupt increase in endo-abdominal pressure as in the case of very strong cough. Thoracic and abdominal surgery can as well be the cause of diaphragmatic hernias. In acute cases patients have abrupt onset of sever dyspnea and pains in the thorax and epigastrium caused by strangulation of herniated portion of the gut [11]. In this case an urgent surgical procedure must be done.

The diagnosis of DH involves the use of chest X-Ray, CT scan, Barium swallow and endoscopy of the upper gastrointestinal (GI) tract. However, other investigations include; magnetic resonance and laparoscopy.

Surgical repair of Diaphragmatic hernia is the only method of alleviating the symptoms and reducing mortality in these patients. Both laparotomy and laparoscopic procedures can be used [12].

Case Reports

CASE REPORT N. 1

We admitted a 74- year old woman who presented with persistent epigastric pain, vomiting, slight to moderate dyspnea on exertion associated with tachycardia, tachypnea and dyspeptic symptoms. Such symptoms have been going on for the last 6 months.

On examination we noted some faint bowel sounds in the chest, breath sounds were reduced on the right, epigastric tenderness, increased bowel sounds. Brachial arterial pressure was 110/70, heart rate was 105/min, blood O2 was 95%. Blood tests were normal except slight anemia and leukocytosis. Cardiac enzymes and ECG were normal. Temperature was 37.

Gastroscopy was performed and revealed a tight stenosis at the gastric fundus. For this reason, chest X-ray with barium swallow was done and revealed the presence of a voluminous mass in the chest cavity containing air bubbles and herniation of gastric fundus and proximal part of the gastric body, consistent with right Para cardiac Morgagni-Larrey diaphragmatic hernia

No recent traumatic event of the thorax and or abdomen was reported by the patient and no family history of diaphragmatic hernia was known.

Laparotomy was then done to reduce the hernia. The patient was placed in a supine position, a middle line incision above the umbilicus was made. Abdominal cavity contents were explored followed by section of adhesions and careful traction was exerted on the herniated

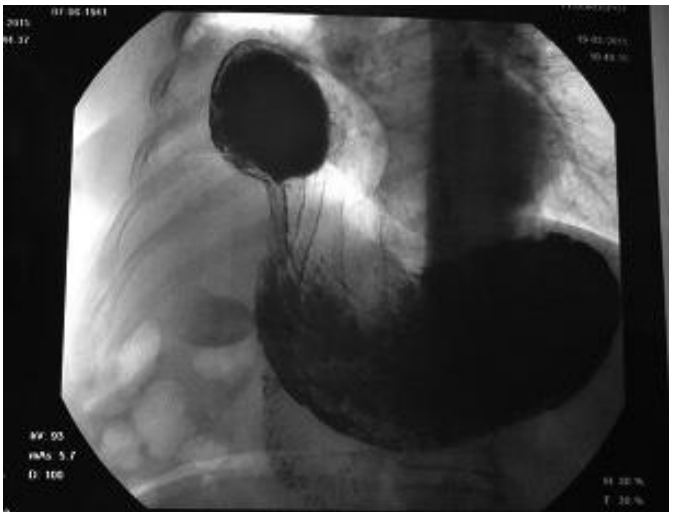

Fig. 1: Gastrographyn swallow reveals the presence of Morgagni-Larrey diaphragmatic hernia.

stomach and then was gently reduced into abdominal cavity. The hernia sac was not resected but closed with long lasting absorbable interrupted sutures. There was no significant loss of blood. No prosthetic materials were used in this case and drainage tube was not necessary. The operation was concluded by closing the abdominal wall.
No complications were observed during and after the operation. The patient was discharged after 3 days. We invited the patient for review after 10 days. Her clinical conditions were good. We again contacted the patient by telephone after 6 months. She was well and all symptoms disappeared.

CASE REPORT N. 2

A 90 year old woman was admitted in our ward for abdominal pain associated with vomiting. On examination we noted abdominal distension with increased bowel sounds, general abdominal tenderness. No heart mummers were noted. Breath sounds were Para phonic. Brachial arterial blood pressure was 100/65, heart beat rate was 100 per min, blood O2 was 96%. No significant alterations in blood test values were observed. Cardiac enzymes and ECG were normal. Body temperature was 37.4
A plan X- Ray of the abdomen was done and revealed the presence of air and liquid levels in the small bowel. CT scan was then done and confirmed obstruction of the small gut by Morgagni diaphragmatic hernia
The patient was subjected to urgent laparotomy. We found a strangulated Morgagni Larrey hernia containing a segment of the small gut that had already undergone necrosis. It was necessary to enlarge the orifice of the hernia through dissection of the radial fibers of the diaphragm and then the hernia was reduced into the abdominal cavity.
The diaphragm was repaired directly with interrupted sutures without use of prosthetic material. The necrotic part of the small gut was resected and latero-lateral anastomosis was done. No drainage tube was required and the patient was discharged in the 5th day after operation. No complications were noted during and after operation. The patient came back for medication and review after 10 days. She was free of symptoms.

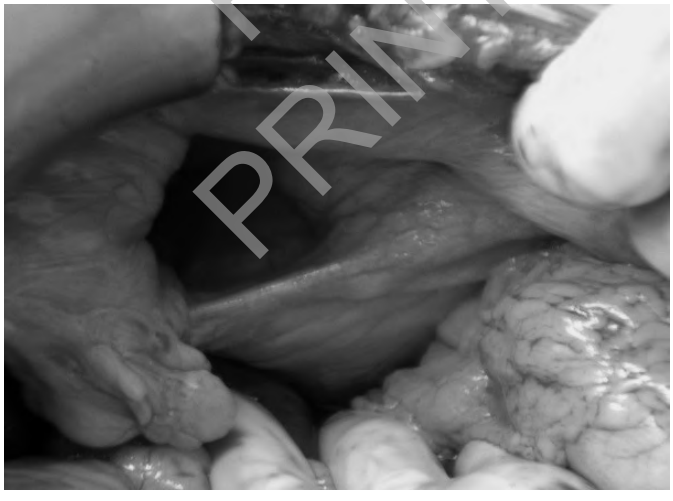

Fig. 2: Intraoperative picture showing large diaphragmatic defect.

Discussion

Morgagni- Larrey diaphragmatic hernias are congenital hernias and are most commonly located on the right side of the chest [13]. In literature they represent about 3% of all Diaphragmatic hernias. However, there has been no extensive studies about their pathogenesis. They are uncommon in adults and are usually discovered accidentally during radiological investigations done for other reasons. While they are common in newly born babies and become symptomatic right at birth and therefore eligible for urgent surgery due to the presence of severe symptoms. Instead, in adults symptoms are usually less severe and are characterized by persistent epigastric and subcostal pains, sometimes associated with vomiting. Physicians usually attribute such symptoms to other pulmonary and/or dyspeptic disturbances. In this case the physicians must take into account the presence of other diaphragmatic hernias such as Bochdalek hernias, hiatal hernias and some thoracic pathologies like diaphragmatic tumors, anterior mediastinal mass which in fact must be considered differential diagnosis of Morgagni-Larrey hernias. It is therefore advisable for physicians to extend their research and suspect Morgagni-Lerry diaphragmatic hernias in epigastric and thoracic pains. The rate of morbidity and mortality will increase as the precise diagnosis is delayed or is inaccurate.
Both laparotomy and laparoscopic procedures with thoracic and abdominal access can be used to reduce diaphragmatic hernias [14]. In our first case we opted to the traditional laparotomy because the hernia was voluminous, in para-cardiac position and the anaesthetist advised us not to use laparoscopic approach as the patient had some cardiac and pulmonary problems, so it was convenient to use the traditional procedure. In the second case it was mandatory to use laparotomy since there was strangulation and necrosis of the small gut. This required intestinal resection and anastomosis.

Riassunto

L'ernia di Morgagni-Larrey è una malattia congenita non comune nel Paziente di età adulta e si presenta con sintomi di media o elevata gravità. In letteratura circa l'80%

di ernie di M.L. sono situate sul lato destro della cavità toracica e sono accompagnate abitualmente da un sacco peritoneale. Solo il 2-3% dei Pazienti alla nascita sono sintomatici e pertanto diventano eleggibili per intervento chirurgico d'urgenza. Le forme meno severe della malattia sono caratterizzate da dolore persistente epigastrico e sotto costale, alcune volte associate a vomito e confuse con disturbi dispeptici.

Presentiamo un report di 2 casi; il primo è di una Paziente di 74 anni che si è presentata alla nostra osservazione per dolore epigastrico persistente, vomito, dispnea lieve/moderata allo sforzo fisico, associata con tachicardia, tachipnea e sintomi dispeptici. Questi sintomi erano presenti da circa 6 mesi. La seconda Paziente è una donna di anni 90 che è stata ricoverata nel nostro reparto per dolore e distensione addominale associati a vomito. In entrambi i casi è stata riconosciuta un'ernia diaframmatica di M.L. sulla scorta di EGDscopia, Rx digerente primo tratto e TC addome in un caso e nell'altro sulla scorta di un TC addome.

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