Morgagni's hernia with four contents

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Abstract

Introduction: Morgagni's hernia is a congenital defect in the diaphragm of very low prevalence that occurs mainly in childhood, with onset of symptoms at that stage. Its presentation is rare in adults. This defect is formed when a defective fusion occurs in the pleuroperitoneal membrane of the diaphragm. **Clinical case:** A 70-year-old female with severe pain in the epigastrium with 1 week of evolution, which is accompanied by oral intolerance, fecal vomiting, and hematemesis. The physical examination revealed peristaltic noises in the thorax. An approach with abdominal tomography was performed, observing a diaphragmatic hernia defect. A surgical approach was made to repair the defect using a prosthetic mesh, finding four contents in the hernia sac. **Conclusions:** It is a disease with a higher prevalence in childhood, being very rare in adulthood. It presents very variable symptoms, making its diagnosis difficult. It can be discovered incidentally, and its prevalence in adults is 2%, predominantly in females. Most patients have respiratory symptoms; seldomly, the symptoms can resemble an intestinal occlusion. The method of choice for diagnosis is tomography, and surgical repair is the definitive treatment.

Key words: Hernioplasty. Morgagni's hernia. Congenital Diaphragmatic hernia. Herniorrhaphy.

Introduction

A congenital diaphragmatic hernia is an anomaly that its classification depends on its location: it is considered a Bochdalek's hernia if the defect is located on the posterolateral pleuroperitoneal membrane or a Morgagni's hernia if it is located in the transverse septum¹. Usually, symptoms are present at birth, but in some cases, they present in adult life. The diaphragm is a structure with tendinous and muscular areas which function as a barrier between the thoracic and abdominal cavities, and the aforementioned hernias are formed by a deficient fusion or migration of the structures, which should be fully formed at 8 weeks of gestation. This present prevalence is 1.7-5.7 for every 10,000 births, being the most frequent Bochdalek's

hernia (95%), with a left posterolateral location in 80% of cases and on the right side in 20% of cases².

Morgagni's hernia was first described in 1769 by Italian anatomist Giovanni Battista Morgagni, referring to a defect of the transverse septum and the costochondral arch with a deficient closure between them and between the sternal and the costochondral joints. Among diaphragmatic hernias, Morgagni's is the one with the least prevalence, with 2% of the cases with an anterior location mostly on the right side due to the pericardium location preventing the passing of structures on the left side². Its occurrence is more common during childhood, where it mostly shows respiratory symptoms, and when present in adults, that occurs predominantly in females with a mean age of 58 years, and in men with a mean age of 50 years. In most cases,

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the diagnosis comes as a result of an accidental discovery. Reports suggest that 72% of patients present some symptomatology, predominantly respiratory symptoms with 36%, whereas 20% present acute obstruction symptoms³. The factors which predispose to the development of symptomatology are those that increase intra-abdominal pressure, such as a chronic cough, constipation, obesity, pregnancy, multiparity, and abdominal trauma^{3,4}.

The method of choice for diagnosis is computerized tomography, where it is possible to identify the hernial defect and its contents, even though it is possible to use X-rays, ultrasound, barium studies, and magnetic resonance imaging.

Clinical case

A 70-year-old female with a history of high blood pressure with 20 years of evolution had a right inguinal hernioplasty with a mesh and had exposure to wood smoke. Furthermore, she had 15 pregnancies with 13 deliveries and two miscarriages, requiring transfusion of packed red cells in her last pregnancy. At the time of her admission, she mentioned previous pain in the epigastrium with an intensity score of 8/10 the previous month, which was resolved with pain relievers. Afterward, she presents the same colicky-like pain in the epigastrium accompanied by oral intolerance, which could neither defecate nor pass flatus, feces and fetid vomiting and an episode of hematemesis at the time of her admittance in the emergency room. She arrived afebrile and normotensive, and a physical examination revealed peristaltic noises in the right thorax, with a hypoventilated pulmonary field. Due to her clinical picture, there was a suspicion of intestinal occlusion. Hence, a decompression with a nasogastric tube is conducted, obtaining 500 ml of fecal matter. Hypochloremia was detected during the laboratory study assessment, and a chest film was conducted, observing the elevation of the right diaphragm (Fig. 1). Therefore, a computerized tomography was requested, observing a herniation of the structures toward the thoracic cavity, consisting of gastric antrum content, duodenum, and colon.

A surgical approach through supraumbilical laparotomy was performed, visualizing a 6 cm × 6 cm hernia defect in the right hemidiaphragm (Fig. 2), finding inside the hernia sac part of the stomach, transverse colon, omentum, and small intestine with some adhesions in it (Fig. 3), and this portion of the small intestine was at 80 cm from the angle of Treitz. An adhesiotomy was

Figure 1. Anteroposterior and lateral thoracic radiography, where there is evidence of a liquid and gas level which is compatible of a hollow viscera.

Figure 2. Hernia defect before content reduction, observing the colon and small intestine, at its first inspection.

conducted and repaired the defect with a Sepramesh® double layer mesh (Fig. 4) fixed with prolene, and a chest tube was placed in the right thorax.

After the surgery, an X-ray of the thorax was performed to evaluate the defect; no hernial defect was evidenced. Medical discharge was granted at day 7 of the post-operative stay without complications.

Discussion

Morgagni's hernia is a pathology where abdominal contents migrate toward the thoracic cavity through a defect in the diaphragm. As mentioned above, it has a low prevalence in pediatric patients and even lower in adults, hence the rarity of this illness and has vague nonspecific symptoms which contribute to its late diagnosis. Is often diagnosed as an incidental discovery through imaging studies in a search for other pathologies.

Figure 3. Hernia defect after reduction of content, showing the abdominothoracic cavity, observing the lung in the background.

Figure 4. After repair of hernia defect with double layer mesh and non-absorbable suture.

Is more prevalent in women, most commonly presenting the defect in the right hemidiaphragm (90%), finding the colon and the omentum in the hernia sac in most of the cases, and in rare cases the gallbladder, stomach or liver^{5,6}.

This pathology has been linked to congenital defects in the neural tube, trisomy 13, 18, and 21, congenital heart diseases, intestinal malrotations, and pectus excavatum⁷.

Its initial approach is through radiography, which is usually utilized to rule out other pathologies or, as mentioned earlier, it is found incidentally, where the physician is able to observe intrabdominal organs in the thoracic cavity, with tomography being the diagnostic

study of choice, which helps to assess the position and size of a hernia and its content.

In this particular case, we have a patient with several risk factors, i.e., obesity and multiparity. A patient who, since initial approach, visited the hospital with a clinical picture of intestinal obstruction, reveals a couple of hematemesis episodes. This has been found in 1% of patients with this pathology. Imaging studies were very useful in the diagnosis. The thoracic X-ray showed a gas-fluid level in the right hemithorax, making the diagnosis definite with tomography. The literature reports recurrences of a hernia in cases where the closure of the defect is made only using a non-absorbable suture⁸. Therefore, in our case, the repair was made using a Sepramesh® double layer mesh and non-absorbable suture. Four organs were found in the hernia sac, one of which is very rarely found there, without observing lesions or viscera perforation, and the excision of the herniary sac was performed. There is some controversy regarding the excision of the hernia sac, finding recurrences in patients who underwent excision. In our case, the patient complied with her follow-up appointment 2 months after the procedure without referring any symptoms, and a thoracic X-ray showed no evidence of a recurrence. The patient then stopped going to the follow-up appointments.

Conclusions

Morgagni's hernia is a difficult pathology to diagnose. This hernia is caused when a congenital structural defect of the diaphragm occurs (dorsal transverse septum absence or defect), being more predominant in pediatric stages rather than in adulthood. This pathology represents <5% of congenital hernias⁹. In pediatric patients, congenital cardiac anomalies are the most linked to this pathology, and defects in auricular and ventricular septum are the most common⁹. This pathology may be confused with other illnesses since it presents a variety of symptoms such as thoracic pain and dyspnea. These occur recurrently in patients and hence are more commonly found.

Moreover, they may present diffuse abdominal pain, intestinal occlusion symptoms (abdominal pain, oral intolerance, abdominal distension, and inability to defecate), dysphagia, and in rare cases, hematemesis and gastroesophageal reflux. During the initial assessment, a thoracic X-ray reveals gas-fluid levels in the hemithorax, which would help diagnosis, since this image is compatible with the presence of a hollow viscera in any of the thoracic cavities. This pathology may be diagnosed

incidentally during a routine assessment. The most utilized imaging study for its diagnosis is the computerized tomography, which is useful to assess the measurements of the defect, content of the hernia sac, and planning of the surgical approach.

Initial management is based on the patient's symptomatology. Patients with occlusive symptoms ought to begin with decompression through a catheter in the urinary tract and the use of a nasogastric tube. Patients with respiratory symptoms should protect the airways. In both types of patients, a quick assessment should be conducted with laboratory studies in a case of associated comorbidity. In patients with occlusion symptoms, it is important to perform a timely diagnosis, since they may suffer significant metabolic alterations which can compromise the patient during the surgical procedure. The choice of definitive treatment is a surgical approach for the repair of the defect through either open surgery, thoracotomy, laparotomy, or a minimally invasive approach such as laparoscopy. There are reports of the use of laparoscopy in the successful repair of hernias. This will depend on the dexterity of the surgeon, the hemodynamic state of the patient, and having the necessary instruments. During the procedure, the repair can only be performed using non-absorbable suture, or a prosthetic mesh placement, which is more recommended.

In asymptomatic patients, surgical repair of the defect is recommended to prevent future complications.

We ought to have a high clinical suspicion to perform a timely diagnosis and a definitive treatment.

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Conflicts of interest

There are no conflicts of interest among the participants.

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