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Acute Intestinal Obstruction Secondary to a Strangulated Bochdalek Hernia: Case Report

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Abstract **Case Report**

Bochdalek hernia is one of the most common types of diaphragmatic hernia. It appears frequently in infants but rarely in adults. We report a case of a 31 year-old male patient with a left-sided congenital posterolateral diaphragmatic hernia with progressive dyspnea and abdominal symptom due to incarceration of the colon and epiploon, but without a history of trauma.

Keywords: Bochdalek hernia, intestinal obstruction, surgery.

INTRODUCTION

Bochdalek hernia is a type of congenital diaphragmatic hernia, which is often diagnosed during the perinatal period and is rare in adults due to its asymptomatic nature. However, it can be revealed during complications such as acute intestinal obstruction, which will be discussed in this article through a case report of a strangulated Bochdalek hernia.

AIM OF THE CASE REPORT

Despite its rarity, Bochdalek hernia should be considered even in adults.

CASE REPORT

We report the case of a 31-year-old man with no notable medical history, particularly no history of thoracoabdominal trauma, who presented a diffuse abdominal pain and an occlusive syndrome five days before his admission. Upon admission to the emergency department, the patient was afebrile, tachycardic at 110 bpm, dyspneic at 22 cpm, with a distended and tympanic abdomen, and more marked abdominal sensitivity in the left hypochondrium. The abdominal X-ray revealed air-fluid levels and a heterogeneous image in the left basal thorax reminiscent of a digestive structure (Figure 1).

Thoracoabdominal CT scan revealed (Figure 2) a mechanical obstruction in a left posterolateral diaphragmatic hernia with a 3 cm collar, containing the left colic angle and the greater omentum (Figure 2), a moderate intraperitoneal effusion with no signs of digestive or other thoracoabdominal complications. Moreover, the laboratory tests showed no anomalies. Emergency surgical exploration revealed a left posterolateral diaphragmatic hernia (Figure 3) with a tight collar that needed to be enlarged to reduce the herniated contents of the left colic angle and greater omentum, which were still viable. Closure of the diaphragmatic breach was performed with separate sutures using a non-resorbable thread. The postoperative course was uneventful.

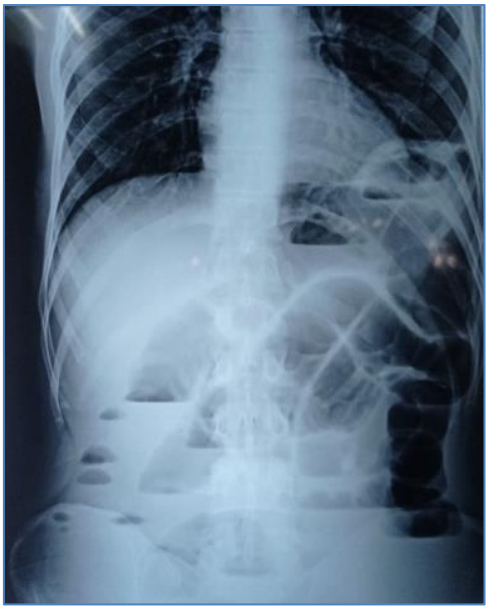

Figure 1: Standard X-ray showing air-fluid levels in the small and large intestines with a heterogeneous image in the left lower thorax

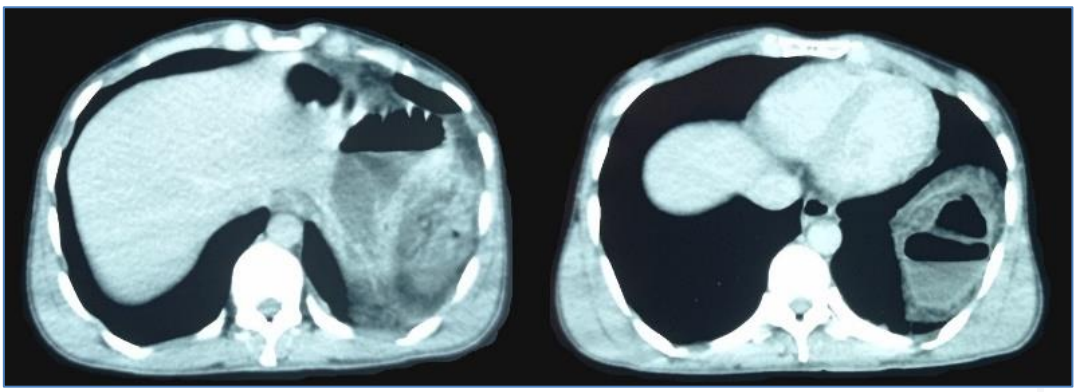

Figure 2: Axial sections showing a strangulated left posterolateral diaphragmatic hernia.

Figure 3: Herniation of the left colonic angle and greater omentum through a left postero-lateral diaphragmatic defect

DISCUSSION

Acute intestinal obstruction is a frequent condition in emergency medicine, and congenital diaphragmatic hernias are a rare etiology in adults that can be diagnosed late in 10 to 30% of cases, posing a diagnostic challenge [1]. Bochdalek hernia represents 80% of congenital diaphragmatic hernias, first described in 1848 by Professor Vincent Alexander Bochdalek in Prague as a form of herniation in the posterolateral region of the diaphragm that can be on the left side (85%), right side (13%), or bilateral (2%) [2-6].

Its prevalence is poorly understood in adults and is estimated to be approximately 0.17 to 6%, with the majority of cases being asymptomatic and mostly found in women (77%). In autopsies, the prevalence of this hernia ranges from 1 in 2000 to 1 in 7000 cases [3-4].

Embryologically, the Bochdalek foramen is a 2-3 cm opening located in the posterior region of the fetal diaphragm, allowing communication between the pleural and peritoneal cavities. This communication closes during the eighth week of development. The diaphragmatic muscle then develops the transverse septum, which embryologically develops from back to front. The hernia forms in case of incomplete fusion between the lateral and posterior parts of the diaphragm. In general, the left communication closes later than the right, explaining the prevalence of this hernia on the left side in the literature. Between 40 and 50% of congenital hernias in newborns are associated with other malformations [5-6].

This is a perinatal pathology that combines noisy symptomatology with significant morbidity and mortality [2]. In adults, it is a rare entity, without specific symptoms and usually discovered fortuitously. In our context, it is revealed during complications that can be respiratory (respiratory distress or cardiac arrest) and/or digestive, with gastric or intestinal strangulation manifested by an occlusive syndrome as in our observation. More rarely, strangulation of the digestive tube can cause hemorrhagic ulceration, or diastatic or ischemic perforation [1-4]. Digestive tube perforation manifests as pyopneumothorax and septic shock, sometimes leading to sudden death. Acute pancreatitis due to strangulation of the body of the pancreas and infarctions or splenic ruptures have also been observed exceptionally [1].

Imaging, especially CT scanning, remains the essential means to ensure the diagnosis, given the rarity of this entity in adults, the nonspecificity of the symptoms, and the absence of a history of trauma. The standard radiography can guide the diagnosis by showing a heterogeneous posterolateral basithoracic image, which may be related to the gastric pouch or intestinal loops, but this method has limitations in case of spontaneous reduction or diaphragmatic herniation, and the solid-air character of the image may mimic a basithoracic tumor (pleuropulmonary, diaphragmatic, ….), emphysema bubbles, lung abscess, or pleuropneumopathy [1-4];

CT, remains the most performant examination because it allows for:

- Identifying the incarcerated organs, which are usually the colon, omentum, and stomach, rarely the liver, kidneys, spleen, and pancreas [2]
- Specifying the location and dimensions of the hernia neck
- More rarely, discovering a contralateral Bochdalek hernia
- Looking for possible complications.

Surgery remains the preferred option for all cases of Bochdalek hernia, even if it is asymptomatic, due to the severity of potential complications. The surgical approach can be either abdominal or thoracic, and can be performed through an open, laparoscopic or robotic method, depending on the clinical presentation, the experience of the surgical team and the available technology. Surgical exploration is necessary to confirm the diagnosis of Bochdalek hernia, as well as to assess the nature and viability of the herniated content. Reduction of the hernia can sometimes be difficult and may require widening of the hernia neck. Repair of the diaphragmatic defect is usually performed using non-absorbable sutures, but in cases of larger defects, prosthetic plates or tissue-engineered grafts may be used to prevent excessive tension after repair, depending on their availability and the local conditions of the surgical field.

Thoracic drainage is no longer routine practice, provided there is rigorous clinical monitoring with early imaging follow-up or at the first signs of complications, as was the case in our patient. The development of minimally invasive techniques allows for reduced morbidity and hospital stay, as well as offering the advantages of a quicker return to normal activities and better cosmetic outcomes.

CONCLUSION

Despite the misleading clinical presentations of Bochdalek hernia, which is a rare and unfamiliar entity, the development of medical imaging techniques has allowed for accurate diagnosis in order to organize timely and appropriate surgical management.

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