

Left-sided Bochdalek Hernia in an Adult : A Case Report with Review of Literature

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Abstract: Bochdalek hernia is a type of Congenital Diaphragmatic Hernia (CDH) that typically presents in childhood - the clinical manifestation of symptoms and diagnosis in adults is extremely rare. There are fewer than 100 cases of left-sided Bochdalek hernia reported in adults in the literature. Congenital left diaphragmatic hernia of Bochdalek rarely occurs in adults. Most of them are asymptomatic. In this article, we report a case of a 25-year-old male with left-sided Bochdalek diaphragmatic hernia who presented with abdominal pain and dyspnea. The chest radiograph showed features suggestive of left-sided diaphragmatic hernia, which was confirmed using Multi Dimensional Computed Tomography (MDCT). The patient underwent laparotomy, wherein a 6cm postero-lateral diaphragmatic defect with herniation of the spleen, part of stomach, colon and small bowel through the opening was found. The contents were reduced into the peritoneal cavity, and the diaphragmatic defect was repaired with non-absorbable sutures.

INTRODUCTION

In 1848, Bochdalek first described a congenital hernia resulting from the developmental failure of the postero-lateral foramina to fuse properly¹. Bochdalek hernia is a congenital anomaly normally diagnosed in neonatal and postnatal patients - the clinical manifestation of symptoms and diagnosis in adults is extremely rare. Most of the hernias (80 to 90%) are found on the left side. Left-sided hernias are rarer because the right pleuro-peritoneal canal closes earlier and the liver buttresses the right diaphragm². There are fewer than 100 cases of Bochdalek hernia reported in adults in the literature. The current treatment of choice of a Bochdalek hernia is surgical repair even in asymptomatic cases because of the risk of visceral herniation and strangulation.³ Surgical treatment encompasses both reduction of the hernia and defect closure.

We report a rare case of a Left-sided Bochdalek hernia in a 25 year old male, for which he was treated successfully. Even though rare, this disorder should be recognised, examined and treated appropriately to avoid complications.

CASE REPORT

A 25-year-old previously healthy male patient was admitted to the emergency department with peri-umbilical pain and left-sided lower chest discomfort associated with shortness of breath since one month. There was no history of thoracic or abdominal trauma. Physical examination was unremarkable. The bowel sounds were audible on the left side of the chest. Postero-anterior chest X-rays showed stomach above the left hemidiaphragm with nasogastric tube showing the position of stomach. (fig 1). Computed tomography was performed which confirmed a left-sided Bochdalek hernia with peritoneal contents in the left side of the chest (fig2).



Fig. 1: Preoperative chest X-ray showing stomach in thorax with nasogastric tube in situ



Fig. 2: Preoperative CT Scan



Fig. 3: Post-operative Chest X-ray

Operative Findings (fig-3)

Herniation of the spleen, part of stomach, transverse colon, omentum and small bowel

were seen in the pleural cavity through the hernial opening. The defect measured as 6x8 cm, and its borders were well defined. The lower lobe of the left lung was compressed and atelectatic.

Procedure

The adhesions were carefully released. The herniated contents were carefully reduced to the peritoneal cavity through the hernia defect. There were no ischemic changes of the bowel, stomach and spleen. Diaphragm was repaired using prolene interrupted sutures. No chest tube was put as the last suture on the diaphragmatic rent was put with keeping infant feeding tube inside the pleural cavity which was tightened with the lung in hyper inflated position so as to expel the residual air from the pleural cavity by keeping the other end of the infant feed-ing tube under water seal. The patient's postoperative recovery was uneventful there was no pneumothorax and lung fields were clear (fig 4). The patient was discharged in satisfactory condition and is now on regular follow-up with us in the out-patient department.

DISCUSSION

Bochdalek first reported herniation in the postero-lateral region of the diaphragm in 1848, re-ferred to as 'Bochdalek hernia'. The hernia defect results in utero from failed closure of the pleuro-peritoneal ducts, primitive communications between the pleural and abdominal cavity⁴. It is a common congenital anomaly, occurring in approximately one in 2200 to 12.500 live births, but is widely considered to be extremely rare in adults⁵.

Most Bochdalek hernias are diagnosed in children who present with acute pulmonary symptoms⁶. In contrast to the acute presentation by infants with these hernias, most adults present with more chronic symptoms, such as chronic dyspnea, chest pain and pleural effusion. Recurrent abdominal pain, postprandial fullness and vomiting are the most common abdominal symptoms in adults. Some patients have no symptoms and the disorder is unexpectedly detected on chest X-ray⁷. The hernia size varies and the content of the hernial sac may differ in each case. In 50% of acute presentations, the hernia sac contains colon, and in 40% the sac may contain multiple other viscera including small bowel, stomach, liver, kidney and gallbladder.

Different imaging modalities such as plain chest/abdominal radiographs, ultrasound, magnetic resonance imaging and CT can be used for diagnosis⁸. Bochdalek hernias are routinely diagnosable with plain film frontal and lateral chest radiography. These hernias are evidenced by abnormal findings above the dome of the diaphragm, such as gas-filled loops of bowel or soft tissue mass. Due to the low sensitivity of plain film chest radiography, Bochdalek hernias may be confused for other thoracic pathology including left middle lobe collapse, air space consolidation, pericardial fat pad, sequestration of the lung, mediastinal lipoma, or anterior mediastinal mass. A Bochdalek hernia can also mimic as a tension pneumothorax on the chest X-ray, which can complicate the treatment⁹.

Chest CT more accurately visualizes focal defects in the diaphragm and can definitively diagnose herniation in comparison to plain film chest

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radiography. The gold standard imaging modality in an emergency or elective case is a double-contrast axial CT¹⁰. MDCTs are used in preference to helical CTs as they have an increased sensitivity. A study by Killeen et al found CT to have sensitivities of 78% for left-sided hernias and 50% for right-sided hernias¹¹. Bochdalek hernia repair can be performed via two approaches, trans-thoracic and trans-abdominal; depending on the clinical scenario. The trans abdominal approach may be preferred in cases of intestinal obstruction or strangulation. This present case highlights the importance of early CT scanning in reaching an early preoperative diagnosis, particularly since a delay in diagnosis can result in significant morbidity and mortality.

Treatment for Bochdalek hernia is essentially surgical- exploratory laparotomy, reducing contents after checking viability, closing the defect primarily with non-absorbable suture material. A synthetic mesh or Teflon patch may be used to reinforce the repair. Laparoscopic repair and thoracoscopic repair has also been described in the literature. In cases presenting early in infancy, children have also been stabilized before surgery using high frequency oscillatory ventilation followed by definite surgical correction. In our patient we did a primary closure of the defect. The occurrence of CDH in adults is rare and misleading even to experienced clinicians, as the patients present with symptoms mimicking other diseases. Hence high index of clinical suspicion is required for prompt diagnosis and treatment in order to avoid complications such as strangulation or bowel perforation.

CONCLUSION

Adulthood left-sided Bochdalek hernias are extremely rare. However, this diagnosis should be suspected in patients who have been exposed to

factors that have increased their intra-abdominal pressure. Signs and symptoms can be non-specific and the present case highlights the importance of acquiring a CT scan at the earliest opportunity particularly when dealing with an unexplained acute abdomen. This is crucial in the management of these patients, as a delay in diagnosis can increase the risk of mortality.

REFERENCES

1. Rout S, Foo FJ, Hayden JD, Guthrie A, Smith AM: Right-sided Bochdalek hernia obstructing in an adult: case report and review of the literature. *Hernia* 2007, 11:359-362.
2. Kanazawa A, Yoshioka Y, Inoi O, Murase J, Kinoshita H: Acute respiratory failure caused by an incarcerated right-sided adult Bochdalek hernia: report of a case. *Surg Today* 2002, 32:812-815
3. Mullins ME, Saini S. Imaging of incidental Bochdalek hernia. *Semin ultrasound CT MR* 2005;26:28-36.
4. Schumpelick V, Steinau G, Schlüper I, Prescher A. Surgical embryology and anatomy of the diaphragm with surgical applications. *Surg Clin North Am* 2000;80:213-39.
5. Yamaguchi M, Kuwano H, Hashizume M, Sugio K, Sugimachi K, Hyoudou Y. Thoracoscopic treatment of Bochdalek hernia in the adult: report of a case. *Ann Thorac Cardiovasc Surg* 2002;8:106-8
6. Kocakusak A, Arikian S, Senturk O, Ycel AF: Bochdalek's hernia in an adult with colon necrosis. *Hernia* 2005, 9:284-287.
7. Shin MS, Mullign SA, Baxley WA, Ho KJ: Bochdalek hernia of diaphragm in the adult. Diagnosis by computer tomography. *Chest* 1987, 92:1098-1101.
8. Temizöz O, Gençhellaç H, Yekeler E, et al. Prevalence and MDCT characteristics of asymptomatic Bochdalek hernia in adult population. *Diagn Interv Radiol* 2010;16:52-5.
9. Dalton AM, Hodgson RS, Crossley C: Bochdalek hernia masquerading as a tension pneumothorax. *Emerg Med J* 2004, 21:393-394
10. Haller JA Professor Bochdalek and his hernia: then and now. *Prog Paediatric Surg* 1986;20:252-5.
11. Killeen KL, Mirvis SE, Shanmuganathan K. Helical CT of diaphragmatic rupture caused by blunt trauma. *Am J Radiol*. 1999;173:1611-1616.



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