CASE REPORT

Laparoscopic repair of adult Bochdalek's hernia

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SUMMARY

Bochdalek's hernia is a type of congenital diaphragmatic hernia occurring in approximately 1 in 2200–12 500 live births. It is considered to be extremely rare in adults and poses a diagnostic challenge. We present a case of a young man who was diagnosed as a case of congenital Bochdalek's hernia and underwent laparoscopic mesh repair.

BACKGROUND

Congenital posterolateral diaphragmatic hernia is a rare surgical condition, primarily diagnosed in neonatal period with life-threatening cardiopulmonary distress. However, on rare occasions, Bochdalek's hernia may remain silent, until adulthood and diagnosis is usually established on radiological investigations. The presentations are varied ranging from acute abdominal pain with features of gut obstruction, pleuritic chest pain, breathlessness and gastrointestinal bleeding. Because of varied presentations, the diagnosis is often delayed.¹ The treatment is always a surgical repair even in asymptomatic patients owing to risk of visceral herniation and strangulation.²

CASE PRESENTATION

A 20-year-old man presented to the outpatient clinic with a 1 year history of pain on the left side of the chest after having meals with radiation to left shoulder and back. He was also complaining of excessive belching. There was no history of trauma. The patient had taken the full course of antitubercular treatment by a private practitioner on suspicion of pulmonary Koch's.

Clinical examination showed impaired percussion note on the left lower chest with decreased breath sounds. Occasional bowel sounds were also heard in the left lower chest. Abdominal examination revealed a scaphoid abdomen with rest of the examination being normal. Clinical impression of diaphragmatic hernia was made and the patient was subjected to radiological investigations for the confirmation of the diagnosis.

INVESTIGATIONS

The chest radiograph showed features suggestive of a left-sided diaphragmatic hernia (figure 1). CT scan of the chest showed herniation of the upper part of stomach along with some part of intestine into the left chest (figure 2).

DIFFERENTIAL DIAGNOSIS

Eventration of the diaphragm is an important differential diagnosis which is difficult to differentiate on chest x-ray. Barium study and contrast-enhanced CT

Figure 1 Chest x-ray showing herniation of the abdominal contents in the left chest.

(CECT) are helpful investigations to resolve the issue. Diagnosis of left-sided adult Bochdalek's hernia was confirmed on the basis of CECT of the chest.

TREATMENT

The patient underwent transabdominal laparoscopic hernia repair of the defect. Intraoperative findings revealed large posterolateral defect of around 6 cm × 5 cm with herniation of part of stomach, omentum and splenic flexure of the colon (figure 3). No hernial sac was present and the contents were adhered to pleura. These contents were reduced and defect was closed with no. 1 Ethibond (polyester) interrupted sutures (figure 4). It was reinforced with dual mesh.

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful and the patient was discharged on fifth postoperative day.

Figure 2 Contrast-enhanced CT chest showing herniation of upper part of the stomach and some part of the small intestine into the left pleural cavity.

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Figure 3 Large posterolateral defect in the diaphragm with herniation of upper part of the stomach, omentum and splenic flexure of the colon.

DISCUSSION

The diaphragm is a muscufibrous dome-shaped membrane that separates the thoracic from the abdominal cavity. It is derived from four embryological precursors—the septum transversum, the right and left pleuroperitoneal membranes and the dorsal mesentery of oesophagus. Various abnormalities may occur owing to faulty embryological development including congenital diaphragmatic hernias and eventration.³

Congenital diaphragmatic hernia is a rare developmental anomaly which includes posterolateral, anterior retrosternal, hiatal and septum transversum defects. The most common of these is posterolateral defect, which was first described by a Czech anatomist, Vincez Alexander Bochdalek.⁴ Bochdalek's hernia constitutes 90% of all diaphragmatic hernias and occurs in approximately 1 in every 2200–12 500 live births every year. They are more common in men and are left-sided in 85% of cases.⁵

Most Bochdalek's hernias are diagnosed in infancy with sign and symptoms suggestive of pulmonary insufficiency, which occur secondary to abdominal contents herniating through the diaphragmatic defect. This congenital diaphragmatic hernia is considered to be extremely rare in adults and have a left-sided predominance. Our patient also had left-sided hernia. The clinical diagnosis is extremely difficult as the symptoms are vague and non-specific. The common presenting symptoms are chest pain, dyspnoea, gastrointestinal bleed and abdominal pain.⁶ Our

Figure 4 Closed diaphragmatic defect with interrupted no. 1 polyester suture.

patient presented with chest pain radiating to the left shoulder and was initially misdiagnosed as pulmonary tuberculosis.

Diagnosis is usually made on radiological findings. A Bochdalek's hernia may either be diagnosed on plain x-ray chest or barium studies. The best radiological investigation in adults is CT scan which has a sensitivity of 78% for left-sided hernia and 50% for the right-sided hernia.⁷ The chest x-ray of our patient was suggestive of left-sided diaphragmatic hernia which was confirmed on CT scan.

The treatment of choice for adult Bochdalek's hernia is surgical repair irrespective of the symptoms owing to increased incidence of visceral herniation and strangulation.² The surgical approach may be via laparotomy, thoracotomy or a combination of both. Currently diaphragmatic hernia can be repaired by thoracoscopy or laparoscopy with or without mesh reinforcement. If preoperative imaging shows hernia content above the level of inferior pulmonary vein, an intrathoracic approach is preferred. Thoracoscopic surgery facilitates the reduction of the herniated content, allowing adhesiolysis with good bleeding control. The disadvantage of the procedure is the difficulty in manipulating the hernia content in large hernias and insufficient examination of abdominal cavity. Thoracoscopic repair should be reserved for small defects because the content of a large hernia will obscure an adequate view.³ We have repaired the hernia laparoscopically with mesh reinforcement.

Regardless of the approach selected, surgical repair has been the treatment of choice with excellent long-term outcomes.

Learning points

- ▶ The congenital diaphragmatic hernia is considered to be extremely rare in adults and have a left-sided predominance.
- ▶ The clinical diagnosis is extremely difficult as the symptoms are vague and non-specific. A high index of suspicion is required to diagnose congenital diaphragmatic hernia.
- ▶ The best radiological investigation to diagnose diaphragmatic hernia is the CT scan which has a sensitivity of 78% for left-sided hernia and 50% for the right-sided hernia.
- ▶ The treatment of choice for adult Bochdalek's hernia is always a surgical repair irrespective of the symptoms.

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REFERENCES

- 1 Sofi FA, Ahmed SH, Dar MA, et al. Nontraumatic massive right-sided Bochdalek hernia in an adult: an unusual presentation. *Am J Emerg Med* 2011;29:356.e5–7.
- 2 Mullins ME, Saini S. Imaging of incidental Bochdalek hernia. *Semin Ultrasound CT MR* 2005;26:28–36.
- 3 Maish MS. The diaphragm. *Surg Clin North Am* 2010;90:955–68.
- 4 Haller JA Jr. Professor Bochdalek and his hernia: then and now. *Prog Pediatr Surg* 1986;20:252–5.
- 5 Keijzer R, Puri P. Congenital diaphragmatic hernia. *Semin Pediatr Surg* 2010;19:180–5.
- 6 Kocakusak A, Arian S, Senturk O, et al. Bochdalek hernia in an adult with colon necrosis. *Hernia* 2005;9:284–7.
- 7 Killeen KL, Mirvis SE, Shanmuganathan K. Helical CT of diaphragmatic rupture caused by blunt trauma. *AJR Am J Roentgenol* 1999;173:1611–16.

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