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Case Report

Right-sided Giant Bochdalek hernia in an adult: a case report

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ARTICLEINFO

Article history:
Received: 29 April, 2019
Accepted: 11 June, 2019
Published: 30 August, 2019

Keywords:
Adult
bochdalek
right sided

ABSTRACT

Diagnosis of a Bochdalek hernia in an adult is rare and even more so in the right diaphragm. We review a case of a 55-year-old woman with a right-sided giant Bochdalek hernia who was experiencing progressive shortness of breath and performance decline. The diagnosis of Bochdalek hernia was made by computed tomography and the right side of liver, right kidney, omentum and flexura hepatica of the colon were herniated to the right hemithorax. The operation was carried out via right thoraco-laparotomy and she made an uneventful recovery. We conclude that maximal exposure was necessary for safe operation and good outcome.

Introduction

Bochdalek hernia is a diaphragmatic hernia usually diagnosed during the neonatal period. It typically occurs in the left hemi-diaphragm and presents with severe respiratory and circulatory compromise. Adult Bochdalek hernia is rare, and most cases are found on the left side of the diaphragm because the right pleuroperitoneal canal closes earlier and the liver buttresses the right diaphragm, minimizing the opportunity for herniation into the right thoracic cavity. There are fewer than 100 cases of Bochdalek hernia reported in adults in the literature and fewer than 20 of those cases involve right-sided hernias [1, 2].

Case report

A 55-year-old female with a previous surgical history of a breast cancer was referred to our tertiary care institution because of experiencing progressive shortness of breath during exercise, performance decline and difficulty of breathing when lying supine for one year. She had a history of minor vehicle accident at the age of two. Chest X-ray demonstrated intestinal gas over the liver and a highly elevated right diaphragm. These findings could be seen already at time of breast cancer treatment five year earlier but were ignored because patient at that time was without symptoms. A computed tomography (CT) scan of the abdomen and thorax demonstrated herniated right side of liver, right kidney and hepatic flexure of the colon and antrum of the stomach present in the thorax (Figure 1). Our patient underwent an elective operation and initially thoracotomy was performed. The right lobe of liver, flexura hepatica of the colon, omentum and right kidney were herniated into the right hemithorax. The diaphragm was missing posteriorly and laterally, and the defect was 15cm in diameter. It was not possible to reduce the herniated organs back to the abdominal cavity safely from thoracotomy only, and incision was continued through the anteromedial diaphragm and costal arch to the abdomen (Figure 2). This allowed safe mobilization of the liver, reduction of the hernia and preparation of the remaining rims of the diaphragm for mesh repair. A 15-cm wide defect in the diaphragm was closed with a Core-tex patch (GORE® DUALMESH®) and interrupted nonabsorbable sutures to reinforce the defect. The postoperative course was uneventful. The patient was mobilized the first postoperative day and bowel function restored at 4th postoperative day. CT scan was taken during the postoperative period due to abdominal pain and it showed transient bowel paralysis. She was discharged 6 days after the operation. At follow-up, she had no symptoms and her chest X-ray was normal.

Comment

Adult Bochdalek hernia commonly presents with gastrointestinal symptoms due to obstruction of the prolapsed gastrointestinal tract but also respiratory symptoms may occur in large hernia [3]. It can be suspected by either frontal or lateral plain film chest radiography.

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http://dx.doi.org/10.31487/j.SCR.2019.03.10

Typical findings are gas-filled loops of bowel or a soft tissue mass above diaphragm and a suspicious chest or abdominal radiograph should lead to a CT scan with contrast, which can achieve definitive diagnosis [4]. Surgical repair in the adult is accomplished by abdominal or thoracic side, depending on anatomic findings on imaging. Reduction of the herniated organs and repair of the defect by direct closure or by prosthesis is necessary. Approaches vary from minimally invasive (laparoscopy and/or thoracoscopy) to laparotomy, thoracotomy or thoracolaparotomy [4].Generally a tailored approach is suggested as a small hernia may be repaired fluently by experienced laparoscopist and in the case of a massive herniation or acute presentation, maximal exposure may be necessary for safe and successful repair [3]. A combined thoracoabdominal approach in this patient was necessary to mobilize and keep the content inside abdomen while applying prosthesis. Also mobilizing the liver and remnant diaphragm over hepatic veins would have been difficult and dangerous without maximal exposure.

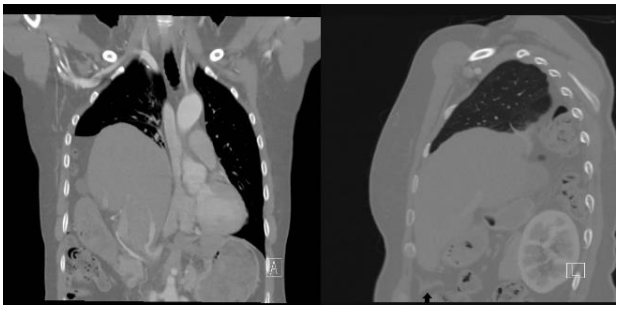

Figure 1: Preoperative computed tomography showing herniated organs.

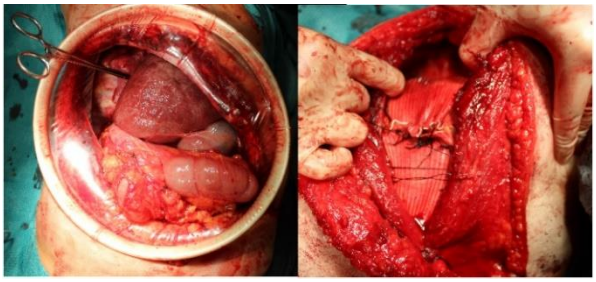

Figure 2: Photograph durgin surgery showgin herniated organs, thoracolaparotomy incision, and prosthesis used to cover the defect.

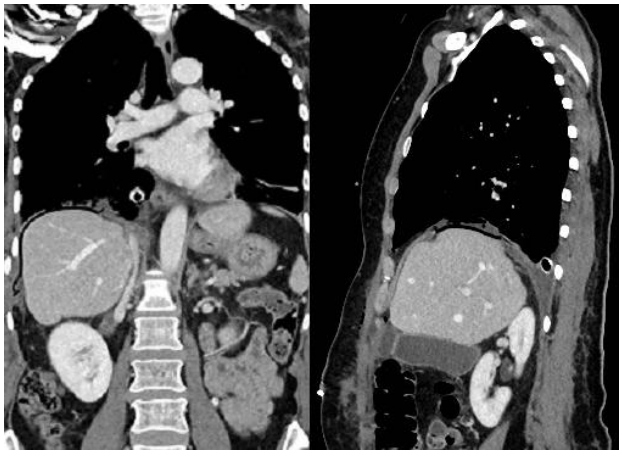

Figure 3: Post-operative computed tomography.

Our patient had had an accident at the age of two, so the possibility of traumatic origin is also an option. However, there was not any other trauma in her medical history. Also, blunt thoracic trauma is rare in children. Balci et all rewied 137 children with blunt trauma and only 2.9% of the cases had diaphragmatic rupture [5]. Moreover, traumatic avulsion of the right diaphragm from the lumbocostal arch is a very rare lesion [6]. In adult's, diaphragmatic ruptures are usually seen in the left diaphragm and because of the protective effect of the liver, diaphragmatic hernias are seen in only 19% of the right-side ruptures [7]. Right-sided Bochdalek hernia in an adult is a rarity with only 20 cases described in the literature [4]. We report a rare case of a right sided Bochdalek hernia in an adult who was treated successfully via right thoracolaparotomy. Even though rare, this disorder should be recognized, examined and treated appropriately to avoid complications.

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