

Bilaterally Located Bochdalek Hernia

Bilateral Yerleşimli Bochdalek Hernisi

Gamze Kırkıl¹, Mehmet Hamdi Muz¹, Ercan Kocakoç²

¹Department of Chest Disease, Firat University, Faculty of Medicine, Elazığ, Turkey

²Department of Radiology, Firat University, Faculty of Medicine, Elazığ, Turkey

ABSTRACT

Bochdalek hernia is a type of congenital diaphragmatic hernia (CDH) that typically presents in childhood, but may rarely be detected in adults. Most cases are asymptomatic and diagnosed incidentally. Hernias are often located on the left-side, while bilateral location is rare. We present a 75-year-old man in whom bilaterally Bochdalek hernia was detected incidentally.

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Key words: Bochdalek hernia, congenital diaphragmatic hernia, spiral computed tomography

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ÖZET

Bochdalek hernisi tipik olarak çocukluk çağında görülen, ancak nadiren erişkinlerde de tespit edilebilen konjenital diyafragmatik hernilerin bir tipidir. Birçok olgu asemptomatiktir ve tesadüfen tanı konur. Herniler sıklıkla sol tarafta lokalize olur, bilateral olması nadirdir. Tesadüfen tanı konan bilateral yerleşimli Bochdalek hernisi olan 75 yaşındaki erkek hastayı sunuyoruz.

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Anahtar sözcükler: Bochdalek hernisi, konjenital diyafragmatik herni, spiral kompüterize tomografi

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INTRODUCTION

Herniation of abdominal or retroperitoneal organs or tissues into the thorax may occur through congenital or acquired weak areas in the diaphragm or through rents resulting from trauma. In infants, herniation through a persistent embryonic pleuroperitoneal hiatus is not only the most common form of diaphragmatic hernia but also the most serious. Its incidence is 1 in 2200 live births [1,2]. In adults, small Bochdalek hernias are much more common than in infants. Small Bochdalek hernias can be detected with computed tomography (CT) scan in adults. In one review of CT scans of the chest and abdomen performed in 940 adult patients, Bochdalek hernia prevalence was found 6% [3]. Their incidence increases with age, suggesting that these hernias are acquired [4].

The literature reports a left-sided predominance for Bochdalek hernia, with left-sided occurrence of the hernia accounting for 70–90% of cases [5,6]. Bilateral Bochdalek hernias were found by Gale [3] to represent an incidence of 3-6%. We report a 75-years-old man with bilateral Bochdalek hernia diagnosed incidentally.

CASE

The patient was a 75-year-old man with a history of increased shortness of breath, cough, sputum expectoration and fever for a few days. He was an ex-smoker with a history of 45 packets/year.

Physical examination: the patient was an ill-appearing man in no acute distress. His temperature was 38.5°C and pulse was 108 beats/min. His blood pressure was 80/60 mmHg and respirations were 22 breaths/min. Chest examination showed inspiratory crackles on the right side of the thorax and expiration was prolonged. Physical examination of other systems showed no abnormalities.

Laboratory findings: Laboratory values were as follows: white blood count 16.8x10³/μL, haemoglobin 17,8 mmol/l, Hct 54.8%, urea 54 mg/dl, Erythrocyte sedimentation rate 6 mm/h, C-reactive protein 192 mg/L. Other parameters were within the normal range. In arterial blood gas analysis; pH:7. 33, partial pressure of arterial carbon dioxide (PaCO₂): 54.4 mmHg, partial pressure of arterial oxygen (PaO₂): 30.6 mmHg, HCO₃⁻: 28.3 mmol/L, and oxygen saturation was 74%. Pulmonary function tests showed marked obstruction;



Figure 1. PA chest radiograph shows non-homogeneous density with irregular margins on right lower zone

forced expiratory volume in the first second (FEV_1) was 43% (predictive), forced vital capacity (FVC) was 66% (predictive) and FEV_1/FVC was 47%. Chest radiography showed non-homogeneous density with irregular margins on the right lower zone (Fig.1). Axial non-contrast CT of thorax (Fig. 2A) and upper abdomen (Fig. 2B) showed bilateral Bochdalek hernias containing fat tissue on the right side, and small intestine, spleen, kidney, and adrenal gland on the left side. The defect of the left posterior diaphragmatic crus was observed on the axial non-contrast CT of the abdomen (Fig. 3). Non-contrast oblique coronal MPR image of the upper abdomen showed the defect of the right posterior diaphragmatic crus (Fig. 4). The fluoroscopic evaluation of the diaphragm showed no pathologic evidence.

Although surgical treatment is recommended in most cases of Bochdalek hernias, our patient did not receive surgical treatment because of his advanced age and his limited respiratory functions.

DISCUSSION

Bochdalek hernia usually occurs in infants with respiratory symptoms and findings [7]. When large, the hernias are associated with a high death rate unless surgically corrected. Even with surgery, the mortality rate is

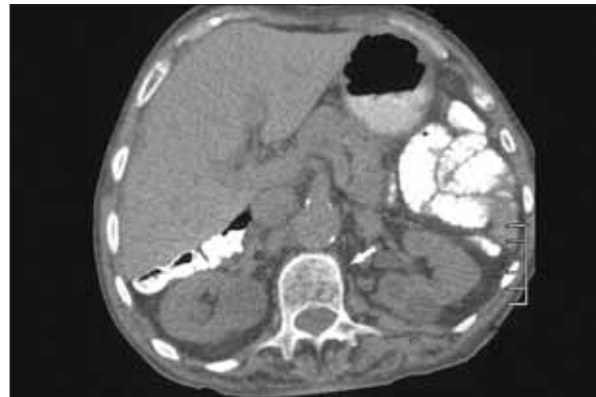


Figure 3. Axial non-contrast CT of the abdomen shows defect of the left posterior diaphragmatic crus



Figure 4. Non-contrast oblique coronal MPR image of upper abdomen shows defect of the right posterior diaphragmatic crus

about 30% as a result of hypoplasia of the underlying lung and pulmonary arterial hypertension [8]. Small hernias are usually asymptomatic and thus cannot be diagnosed until adulthood.

Most Bochdalek hernias are sporadic, with only 2% being familial [9]. The defects are usually unilateral and involve the left diaphragm in 75% of cases [10]. Bilateral defects occur in < 5% of cases and represent 2% of sporadic and 10% of familial CDH [11]. The reasons for the left localization dominance are; the liver can prevent herniation on the right side, and the pleuroperitoneal ductus closes early on the right side [12,13]. These hernias may contain fat, retroperitoneal structures, or intra-

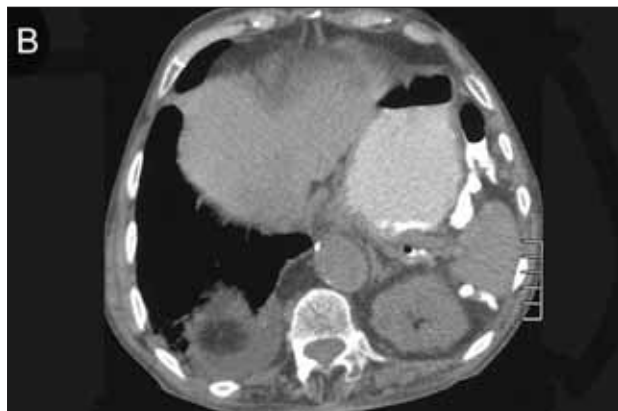
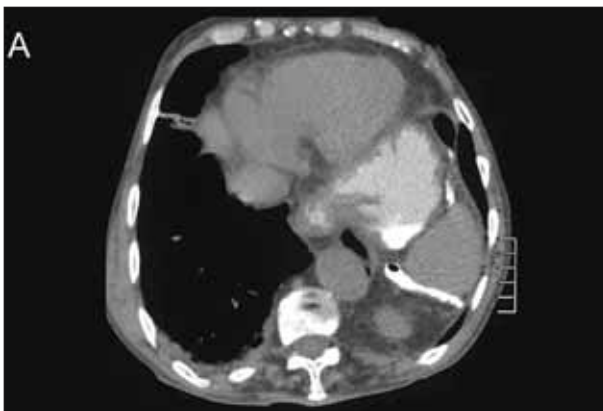


Figure 2. Axial non-contrast CT of thorax (A) and upper abdomen (B) shows bilateral Bochdalek hernia containing fat tissue on the right side, and small intestine, spleen, kidney, and adrenal gland on the left side

peritoneal contents, although the latter two conditions are exceedingly rare [14]. In right-sided Bochdalek hernias, the contents are predominantly the liver, the kidney, and fat. A left-sided hernia may contain the enteric tract, spleen, liver, pancreas, kidney, or fat. The hernia in our case contained perinephric fat tissue bilaterally and intestinal segments on the left side.

Putative causes for late-presenting hernias include congenital herniation, blunt or penetrating trauma, physical exertion (including sexual intercourse), pregnancy, labour and delivery, sneezing or coughing, and even ingestion of a large meal [5]. If patients with late presenting hernias had previous CT or MR imaging studies that had been obtained over time, the causes of individual cases of hernia and the evolution of this entity could be discerned. We could not obtain any previous CT or MR findings of our case, so we could not determine whether the hernia was acquired or congenital.

In adults, most Bochdalek hernias are usually asymptomatic, and thus the finding of the condition is incidental [15]. The patients may present with chest pain or describe symptoms that are generally referable to the gastrointestinal tract [16]. Our case had neither chest pain nor gastrointestinal tract symptoms, and the presence of hernia was determined incidentally.

On the chest radiograph, Bochdalek hernias can present as a focal bulge in the hemidiaphragm or as a mass adjacent to the posteromedial aspect of either hemidiaphragm. The diagnosis can often be suspected by the typical location and by the density of the mass being lower than soft tissue as a result of its fat content. However, this appearance can mimic that of pulmonary, mediastinal, or paravertebral masses [17]. Our case had pneumonic consolidation on right side, so that the hernia was hidden. The diagnosis of Bochdalek hernia is readily made on CT [17]. Occasionally, spiral CT with coronal or sagittal reformations may be required to demonstrate the defects [18]. The diagnosis of hernia in our case was made on spiral CT. The CT images of our case are very important for diagnosis, as in the literature.

The differential diagnosis must be made from diaphragmatic rupture and diaphragmal evantration. For diaphragmatic rupture diagnosis, this possibility must be kept in mind following trauma [19]. Ninety % of traumatic diaphragm ruptures are seen together with other organ traumas. PA graphy is the most important diagnostic tool in diaphragmatic rupture [20] We eliminated the possibility of rupture because our patient had no trauma history. Moreover, we had found no symptom or finding that suggested other organ traumas.

Diaphragmal evantration can be congenital or acquired. The congenital type can be confused with acquired type, because it can cause symptoms similar to the diaphragmatic hernias with sac. The acquired lesions may occur after phrenic nerve paralysis or dysfunction [21]. In some cases slight symptoms occur, but respiratory failure may also appear. The diagnosis can be made with fluoroscopic images of the diaphragm. The fluoroscopic evaluation of the diaphragm showed no patho-

logic sign in our case ,so we excluded the possibility evantration.

The treatment regimens of Bochdalek hernia are controversial. Some authors maintain that the treatment of choice is operative repair due to the risk of visceral herniation and strangulation [22], others believe that surgical treatment cause more risks than benefits [23]. Our patient were not recommended any surgical treatment because of his age, and the presence of severe obstruction in his pulmonary function tests.

In conclusion, although the CDH is an life-threatening malformation in neonates, acquired diaphragmatic hernias in adults are usually diagnosed incidentally. When a Bochdalek hernia is diagnosed, the treatment regimen can be determined individually.

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