

HOSTED BY



ELSEVIER

Contents lists available at ScienceDirect

Journal of Acute Disease

journal homepage: www.jadweb.orgCase report <http://dx.doi.org/10.1016/j.joad.2015.10.007>

Acute Bochdalek hernia in an adult: A case report of a 3D image

Rejeb Imen¹, Chakroun-Walha Olfa¹, Ksibi Hichem^{1*}, Nasri Abdennour¹, Chtara Kamilia², Chaari Adel¹, Rekik Noureddine¹¹Department of Critical Care and Emergency, Habib Bourguiba University Hospital, Sfax, Tunisia²Department of Intensive Care, Habib Bourguiba University Hospital, Sfax, Tunisia

ARTICLE INFO

Article history:

Received 28 Jan 2015

Received in revised form 11 Jul 2015

Accepted 5 Oct 2015

Available online 13 Jun 2016

Keywords:

Adult hernia

Bochdalek hernia

Transverse colon

3D CT

ABSTRACT

A 61-year-old male was found to have a bilateral Bochdalek hernia on routine CT during admission for acute respiratory failure. The chest X-ray showed a left paracardiac mass having a diameter of 6 cm. This mass was initially considered as a mediastinal tumor. However, CT scan showed a bilateral large defect of the posteromedial portion of the diaphragm and mesenteric fat. 3D imaging was also useful for the stereographic perception of Bochdalek hernia. Although Bochdalek hernia is not rare, to our knowledge, this is the first case of Bochdalek hernia continued transverse colon observed by spiral CT 3D imaging.

1. Introduction

In adults, most Bochdalek hernias are asymptomatic, and therefore their detection is usually incidental. We describe here a case of a large asymptomatic diaphragmatic hernia which is confirmed by CT.

2. Case report

A 61-year-old man was admitted in January 2010 to the Emergency Department, Habib Bourguiba University Hospital, with a sudden onset of dyspnea and abdominal pain. He had a medical history of epilepsy, but had no history of any previous thoracoabdominal trauma or surgery. His temperature was 37.8 °C and he was cyanotic.

A chest X-ray revealed a left paracardiac mass about 6 cm × 3 cm in diameters (Figure 1). A posterior mediastinal tumor was suspected. The laboratory data revealed that white cell count was $12.1 \times 10^3/\mu\text{L}$, hemoglobin was 2.7 g/dL, hematocrit was 12.2% and platelet count was 22000. Besides, the kidney and liver functions were normal. An arterial

blood gas analysis showed pH 7.43, 32 mmHg arterial partial pressure of carbon dioxide and 143 mmHg arterial partial pressure of oxygen, while he breathed 6 L/min O₂ through a face mask.

Bone marrow examination showed an erythroblastic reaction about 60% without malignancy. Ciprofloxacin and cefotaxime were administered. After 3 days, clinical symptoms and

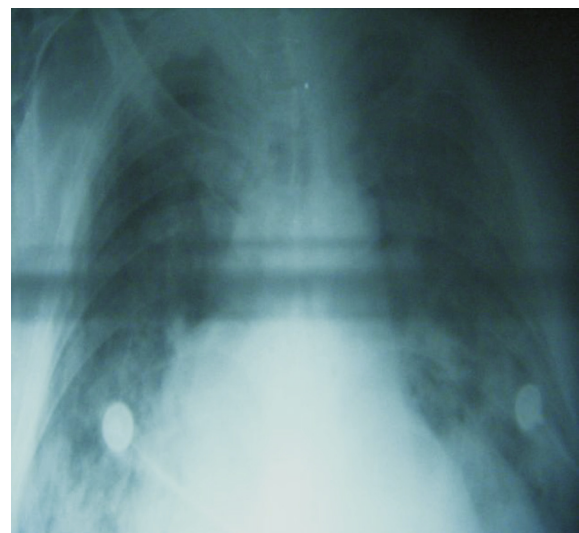


Figure 1. A chest X-ray on admission showing a left paracardiac mass about 6 cm × 3 cm in diameters.

*Corresponding author: Ksibi Hichem, Department of Critical Care and Emergency, Habib Bourguiba University Hospital, Sfax, Tunisia.

Tel: +216 98415554, +216 74241511 (1619)

E-mail: ksibi_hichem@yahoo.fr

Peer review under responsibility of Hainan Medical College. The journal implements double-blind peer review practiced by specially invited international editorial board members.

haemogramme abnormalities were resolved by red cell transfusion.

CT was performed and showed bilateral multifocal consolidation and bilateral pleural effusion, a round mass with a smooth outline and a homogenous low density area indicative of fatty tissues and bilateral discontinuity of the diaphragmatic musculature continued a transverse colon (Figure 2). The 3D reconstruction confirmed these findings and suggested the presence of bilateral Bochdalek hernias (Figure 3).

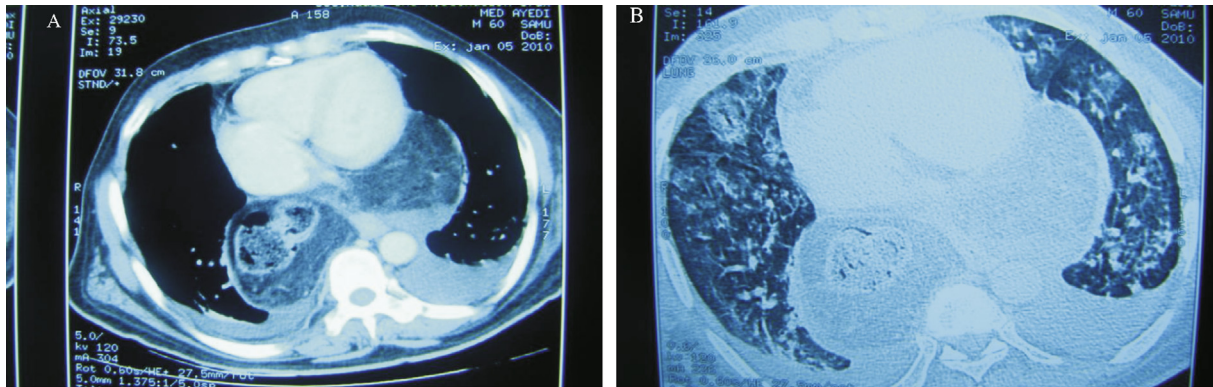


Figure 2. A CT showing a low-density and bilateral discontinuity of the diaphragmatic musculature continued a transverse colon. A: Pulmonary conditions; B: Mediastinal condition.



Figure 3. 3D coronal reconstruction of a chest CT scan illustrating bilateral discontinuity of the diaphragmatic musculature continued a transverse colon.

After 7 days, the patient was weaned from oxygen and was discharged. He was convened 10 days later to repair his diaphragmatic defect but he refused.

3. Discussion

Congenital hernias resulting from a developmental failure of posterolateral diaphragmatic foramina to fuse properly were first described by Victor Alexander Bochdalek in 1848^[1].

It is more common in infants (90%) with an incidence of 1/2500 live births. In adults, most Bochdalek hernias are asymptomatic, and therefore their detection is usually incidental. The real prevalence in the population is unknown, with an estimated range between 0.17% and 12.7%^[2,3].

The prevalence of left- and right-sided Bochdalek hernias is a controversial topic. Left-sided predominance has been reported

to have prevalence between 70% and 90% in most reports^[2,4,5]. However, Temizöz *et al.* reported the percentages of Bochdalek hernias as 42.2% left-sided, 37.4% right-sided and 20.4% bilateral, with no statistically significant correlation of location and prevalence^[6].

The majority of these small Bochdalek hernias in adults are composed of retroperitoneal fat^[6,7]. Besides in large hernias, the liver and kidney are predominantly in right-sided and enteric tract, and spleen, liver, pancreas, kidney, or fat in left-sided.

Colon containing hernias are rare and usually occur through left-sided defects^[3,8,9].

It is rarely diagnosed in adult patients with pain, pulmonary, digestive clinical signs being the most common symptoms^[10,11]. To our knowledge, there are only five published cases of Bochdalek hernia in the adult population causing respiratory failure^[12].

The principal management of Bochdalek hernias includes replacing the abdominal organs and repairing the defect. However, the best method to accomplish this is still controversial^[13].

Many cases were described in literature. Most of case reports described a diaphragmatic hernia in one side^[9-13]. The case reported here is interesting because the patient has a large bilateral diaphragmatic hernia which was confirmed by CT and 3D reconstructions to have definite protrusion of transverse colon through both sides of the hernias.

Conflict of interest statement

The authors report no conflict of interest.

References

- [1] Salaçin S, Alper B, Cekin N, Gülmen MK. Bochdalek hernia in adulthood: a review and an autopsy case report. *J Forensic Sci* 1994; **39**: 1112-6.
- [2] Mullins ME, Stein J, Saini SS, Mueller PR. Prevalence of incidental Bochdalek's hernia in a large adult population. *AJR Am J Roentgenol* 2001; **177**: 363-6.
- [3] Gale ME. Bochdalek hernia: prevalence and CT characteristics. *Radiology* 1985; **156**: 449-52.
- [4] Kinoshita F, Ishiyama M, Honda S, Matsuzako M, Oikado K, Kinoshita T, et al. Late-presenting posterior transdiaphragmatic (Bochdalek) hernia in adults: prevalence and MDCT characteristics. *J Thorac Imaging* 2009; **24**: 17-22.

- [5] Eren S, Ciriş F. Diaphragmatic hernia: diagnostic approaches with review of the literature. *Eur J Radiol* 2005; **54**: 448-59.
- [6] Temizöz O, Gençhellaç H, Yekeler E, Umit H, Unlü E, Ozdemir H, et al. Prevalence and MDCT characteristics of asymptomatic Bochdalek hernia in adult population. *Diagn Interv Radiol* 2010; **16**(1): 52-5.
- [7] Nitecki S, Bar-Maor JA. Late presentation of Bochdalek hernia: our experience and review of the literature. *Isr J Med Sci* 1992; **28**: 711-4.
- [8] Bétrémieux P, Dabadie A, Chapuis M, Pladys P, Tréguier C, Frémond B, et al. Late presenting Bochdalek hernia containing colon: misdiagnosis risk. *Eur J Pediatr Surg* 1995; **5**: 113-5.
- [9] Onuk Ö, Taş T, Şentürk AB, Sinanoğlu O, Balcı MB, Çelik O, et al. Right-sided Bochdalek hernia with intrathoracic ectopic kidney in an advanced-age adult: a case report. *Urol Int* 2014; **93**(3): 368-70.
- [10] Brown SR, Horton JD, Trivette E, Hofmann LJ, Johnson JM. Bochdalek hernia in the adult: demographics, presentation, and surgical management. *Hernia* 2011; **15**(1): 23-30.
- [11] Frisoni R, Germain A, Ayav A, Brunaud L, Bresler L. Thoracoscopic treatment of a right Bochdalek hernia in an adult (with video). *J Visc Surg* 2014; **151**(3): 239.
- [12] Jubber I, Madani Y, Yousaf S, Jubber A. Bochdalek hernia causing type II respiratory failure in an elderly patient. *BMJ Case Rep* 2014; <http://dx.doi.org/10.1136/bcr-2014-203915>.
- [13] Karamustafaoglu YA, Yoruk Y, Kuzucuoglu M, Yanik F. Massive Bochdalek diaphragmatic hernia in adult with hypoplastic lung. *Asian Cardiovasc Thorac Ann* 2015; **23**(4): 461-3.