

DOI: 10.12809/
hkmj133822

History

An 81-year-old chronic smoker with known chronic obstructive pulmonary disease (COPD) presented with a 2-day history of dyspnoea and dry cough in January 2012. His oxygen saturation was normal, but physical examination revealed occasional expiratory wheezing and decreased air entry over the right lower zone. The complete blood picture showed no leukocytoses. The patient was initially managed as an infective COPD exacerbation. The chest X-ray (CXR) yielded presence of bowel gas and bowel shadow over the right lower hemithorax, with preservation of the right costophrenic angle in the frontal projection and the posterior costophrenic sulcus in the lateral projection (Fig 1). Without blunting of costophrenic angles and the posterior costophrenic

sulci, presence of pleural effusion was unlikely. A right decubitus CXR confirmed no significant pleural fluid was present. A CXR taken 7 years earlier also revealed similar changes but was interpreted as a right-sided pleural effusion. Computed tomography of the thorax with contrast showed the presence of stomach and transverse colon within the right hemithorax (Fig 2) and emphysema. The patient could recall no previous history of major trauma to the abdomen. Based on the history and radiological finding, a right Bochdalek hernia was diagnosed. Owing to his advanced age and poor lung function, the patient declined surgical repair.

Discussion

The diaphragm normally develops from septum transversum, pleuroperitoneal membranes, oesophageal mesentery, and muscular ingrowth from lateral body walls. The pleuroperitoneal canals normally close by the fusion between septum transversum and oesophageal mesentery and connection with the pleuroperitoneal membranes at around 8 weeks of gestation.¹ Molecular mechanisms involving retinoic acid and/or the Sonic Hedgehog pathway have been linked to diaphragmatic development.¹ If these mechanisms are impaired, it will result in congenital diaphragmatic hernia (CDH) which occurs in 1 in 2000 to 3000 newborns.¹ This defect is classified according to its position; in 95% of cases it is a posterolateral type and in 85% of instances it affects the left side.² Right-sided Bochdalek hernia is rare because the liver acts as a barrier and right pleuroperitoneal foramen closes earlier.^{1,2} Most Bochdalek hernias are diagnosed in children (median age, 6 months) who present with acute respiratory symptoms.³ Right-sided Bochdalek hernia in adults are only rarely reported and usually give rise to symptoms such as chronic shortness of breath, pleuritic chest pains, and features suggesting a pleural effusion or abdominal symptoms (pain, features of obstruction, or strangulation).²⁻⁵ The delayed presentation of our patient may be related to his chronic cough being ascribed exclusively to smoking; cough of chronic smokers may also contribute to herniation of abdominal viscera, as suspected in other case reports.² Other factors that may contribute to a delayed presentation include obesity and pregnancy.² Apart from colon or stomach, other abdominal viscera (liver, gallbladder, small bowel, or kidney) have been found in the hernial sac.³ Surgical repair is usually recommended in order to prevent future complications like strangulation or

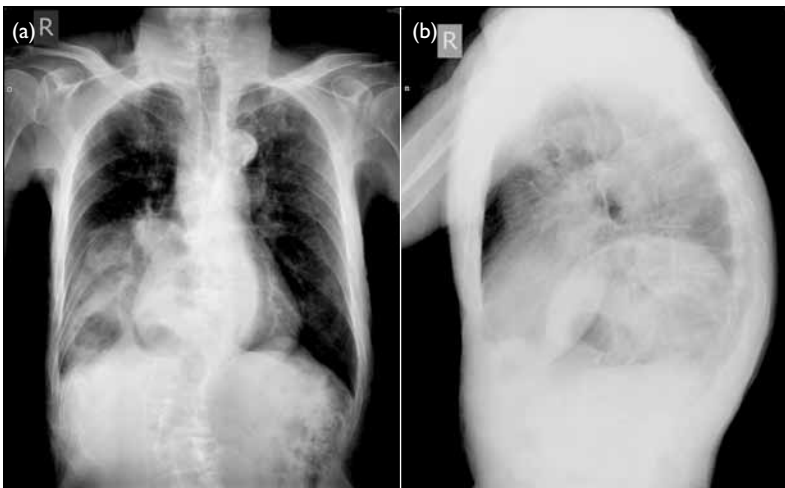


FIG 1. (a) Posteroanterior chest X-ray and (b) right lateral chest X-ray show the bowel loops situated over the lower zone of the right hemithorax and thoracic scoliosis. Right costophrenic angle in the frontal projection and posterior costophrenic sulcus in the lateral projection are not blunted as in patients with pleural effusions

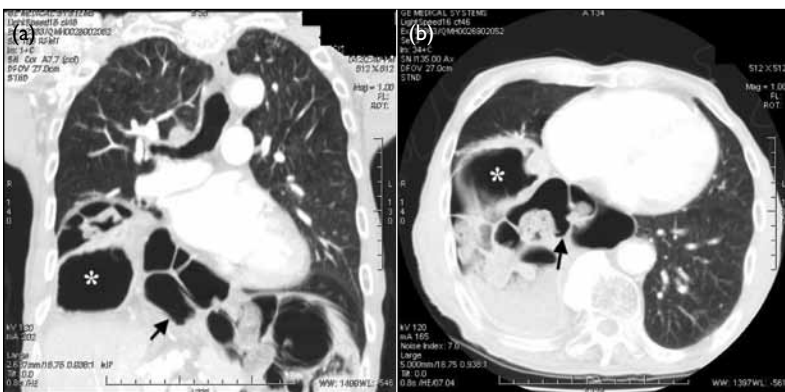


FIG 2. Thoracic computed tomography with contrast: (a) coronal reformatting and (b) axial view. These show the stomach (*) and transverse colon (→) within the right hemithorax

intestinal obstruction, but was declined by our patient. The surgery involves reduction of the abdominal contents and repair of diaphragmatic defect via a laparotomy or thoracotomy.³⁻⁵ Laparoscopic or thoracoscopic repairs are alternatives.^{3,5} In summary, clinicians should be prepared to diagnose CDH even in the elderly.

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References

1. Keijzer R, Puri P. Congenital diaphragmatic hernia. *Semin Pediatr Surg* 2010;19:180-5. [cross ref](#)
2. 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.
3. Laaksonen E, Silvasti S, Hakala T. Right-sided Bochdalek hernia in an adult: a case report. *J Med Case Rep* 2009;3:9291. [cross ref](#)
4. Deb SJ. Massive right-sided Bochdalek hernia with two unusual findings: a case report. *J Med Case Rep* 2011;5:519. [cross ref](#)
5. Fraser JD, Craft RO, Harold KL, Jaroszewski DE. Minimally invasive repair of a congenital right-sided diaphragmatic hernia in an adult. *Surg Laparosc Endosc Percutan Tech* 2009;19:e5-7. [cross ref](#)