# Rare right congenital diaphragmatic hernia with ileum and colon herniated into thoracic cavity in an 18-year-old adult

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*To the Editor:* Congenital diaphragmatic hernia is a congenital anomaly, rarely found in adults. Delayed presentation of congenital diaphragmatic hernia in adults can cause diagnostic dilemma. Immediate laparoscopic repair is recommended for these patients. Here, we presented a case of an 18-year-old man with complaints of chest pain and abdominal discomfort. X-ray and computed tomography (CT) scan revealed a right-sided pleuro-peritoneal hiatus hernia, which is located at postero-lateral diaphragm, also known as Bochdalek hernia.

An 18-year-old Chinese man presented with right chest pain and right lower abdominal discomfort for 1 week. The chest pain was distending and stabbing, which became heavier when lying down and alleviated while standing. He reported a poor performance in sports, worsened since 5 years ago. He denied any coughing, chest distress or dyspnea. His medical history only included appendicitis which was successfully treated with appendectomy 5 years ago and recent trauma history was denied. The patient was a little bit overweight with body mass index of 27.8 kg/m$^2$. On our initial physical examination, the patient's vital signs were stable. Pulmonary examination found decreased breath sounds of right lower lung and an elevation of inferior boundary of right lung on percussion while no abnormalities were found in the cardiac and abdominal examination. A Chest radiograph showed atelectasis of right lung and elevated right diaphragm [Figure 1A]. A CT scan confirmed the presence of pleuro-peritoneal hiatus hernia of right diaphragm, showing a local defect of right posterolateral diaphragm with part of small intestine, colon and mesentery herniating into thoracic cavity [Figure 1B and 1C]. The ultrasound showed no pleural or pericardial effusion. According to his symptoms, signs and radiographic outcomes and without explicit trauma history, he was diagnosed as pleuro-peritoneal hiatus hernia (Bochdalek hernia) of right diaphragm, a kind of congenital diaphragmatic hernia (CDH). A laparoscopic tension-free hernioplasty of right diaphragm was then performed, using an anti-adhesion patch. In the operation, an approximate 7 cm × 6 cm × 5 cm defect was found on the top of right diaphragm, with multiple abdominal organs (part of ileum, right colon) herniating into right thoracic cavity with slight adhesion. The patient recovered quickly and could walk around by himself 3 days after surgery. One month later, a repeated CT scan showed a normal manifestation of bilateral lungs [Figure 1D and 1E].

CDH is a rare congenital anomaly, with an incidence of 1:2000–3000 live births.[1] CDH mainly occurs in the newborn or in childhood with severe respiratory distress and high mortality of 40% to 50%.[2] However, on even more rare occasions, a very small subset of patients may not develop symptoms until adulthood and one fourth to half of all CDH in adults are diagnosed incidentally.[3] An adult with CDH may present with a wide range of acute or chronic respiratory or intermittent gastrointestinal symptoms or may be completely asymptomatic,[2] making CDH easy to misdiagnose. Chest radiograph and CT scan assist to demonstrate herniated bowel loops with air fluid levels and elevation of the diaphragm.[3]

By further analyzing our case, we reckoned that maybe the defect was too small or there was just a weak area of diaphragm so that the patient did not manifest with any symptoms during the neonatal period. With increased intraabdominal pressure, the diaphragmatic defect had enlarged progressively along with herniation of abdominal contents, leading to chest pain and abdominal discomfort. Yet despite the serious atelectasis, the patient did not complain about dyspnea or chest distress.

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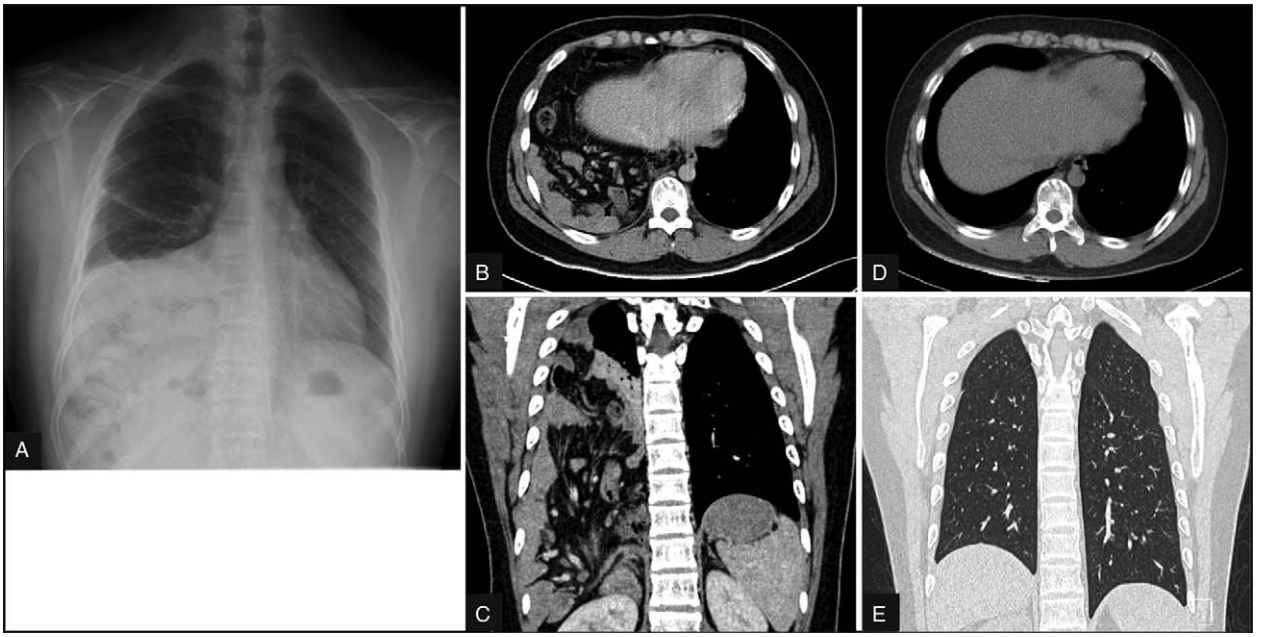


**Figure 1:** Chest radiograph and CT scan of chest pre-and post-operation. A: Chest radiograph showing atelectasis of right lung and elevated right diaphragm. B (axial) and C (coronal): CT scan confirmed the presence of pleuro-peritoneal hiatus hernia of right diaphragm. D (axial) and E (coronal): CT scan showed a normal manifestation of bilateral lungs after surgery. CT: Computed tomography.

It is recommended that all diaphragmatic hernia patients undergo surgical repair even when asymptomatic, given the risk of complications such as incarceration, intestinal obstruction and strangulation.[3,4] As we can see, if we did not intervene in time but allowed progressive enlargement of the defect, our patient might have suffered from potentially life-threatening complications.

In conclusion, delayed presentation of CDH is rare and here, a rare case of right-sided CDH is presented. X-ray and CT were significant for making the diagnosis. The case prompts us that rare hernias like this adult diaphragmatic hernia should be kept in mind when coming to a diagnosis. We urge to perform an operation because surgical repair is associated with low mortality and low recurrence rate.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. Written informed consent was obtained from the patient for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

None.

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