

## Congenital Bochdalek's Diaphragmatic Hernia

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### Abstract

Diagnosis of a rare Bochdalek's congenital diaphragmatic hernia may be challenging. Our patient presented with respiratory and gastrointestinal findings. Chest radiograph revealed the stomach in the left thorax. Diagnosis of recurrent bacterial pneumonia was incorrectly made because of repeated symptoms. Chest radiograph can provide sufficient information for rapid diagnosis.

**Key words:** Bochdalek's diaphragmatic hernia, Congenital Diaphragmatic Hernia,

### Introduction

Congenital diaphragmatic hernias (CDH) resulting from developmental failure of posterolateral diaphragmatic foramina to fuse properly are rare and were first described by Bochdalek in 1848<sup>1</sup>. Although the prevalence of Bochdalek's hernia remains unknown, estimates ranging from as low as 1 in 2000-7000 based on autopsies to as high as 6% based on CT examinations<sup>1-3</sup>. The condition is produced by a hole in the diaphragm, which allows the abdominal contents to protrude into the chest cavity. While Bochdalek's CDH occurs more in infants and mostly located on the left side of the diaphragm, Morgagni's type usually occur on the right and common in adults<sup>1,3,4</sup>. Diagnosis of CDH may be incidental or symptomatic. In some patients, however, diagnosis may prove problematic, as it was the situation in this case report.

### The Case

Our patient is a six month old boy who presented with fever, intermittent respiratory and gastrointestinal symptoms for about two months, though his predicament was noted first at two weeks of life. He was being managed for recurrent bacterial pneumonia until he was admitted at our health facility. He was moderately dehydrated, abdomen was scaphoid and bowel sound was heard in the chest. Chest radiograph showed the presence of the stomach in the left thorax with right sided mediastinal shift (Fig 1). Barium studies, upper gastrointestinal endoscopy, abdominal CT scan,

echocardiography and electrocardiography were desired for confirmation of diagnosis and to further evaluate the heart. These were not done due to lack of financial resources, and also some of the equipments needed are lacking in our health center. The patient was rehydrated and underwent exploratory laparotomy where a large diaphragmatic defect measuring 10cm by 6cm was observed (Fig 2). The spleen, transverse colon, stomach and omentum were found in the chest of the patient (Fig 3). Hernia reduction and repair of diaphragmatic defect was offered in addition to intravenous fluids and parenteral antibiotics. Patient responded well to treatment.

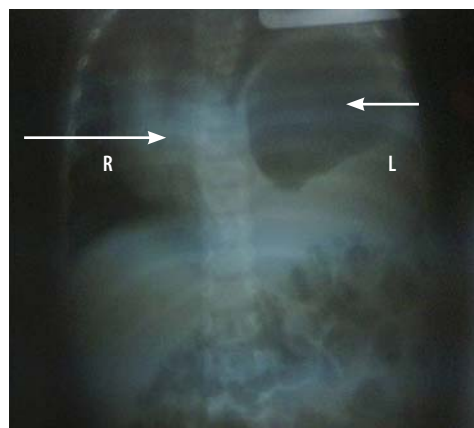


Fig 1: Chest radiograph. (Arrow points the stomach in the left thorax displacing mediastinal structures to the right of the thoracic cavity as indicated by arrow).



Fig 2: Large diaphragmatic defect on exploratory laparotomy.



Fig 3: Image of abdominal viscera pulled out of the chest cavity. (Arrows points to the stomach omentum and transverse colon).

## Discussion

Bochdalek's CDH, just like the other forms of CDH may be diagnosed incidentally while investigating other conditions<sup>2,5</sup>. This was similar to what was noticed in the current case report. Our patient was being evaluated for recurrent bacterial pneumonia because of frequent chest findings. Features of CDH were not picked early on chest X-ray possible due to the rare nature of CDH, as such, little or no information on it may be demonstrated among junior medical practitioners. The diagnosis of our patient was made after a thorough review of chest X-ray by senior colleagues who are specialist in Paediatrics. Cardio-respiratory findings are usually due to compression of thoracic organs and other congenital anomalies of the chest<sup>4,5</sup>. Unfortunately financial constrain limited us from doing investigations that would enable us to assess the heart in terms of structure and function. Additionally, recurrent chest infections and gastrointestinal symptoms (vomiting and bleeding) have been reported in subjects with CDH<sup>4,7,8</sup>. Except for bleeding, vomiting and recurrent chest infections were observed in our patient, and these could be linked to

partial bowel obstruction, hypoxia due to the hernia, but strangulation of the bowels would lead to bleeding.

Although our patient had His first symptoms at 14 days of life, He was seemingly in good clinical health during the first four months of life. This agreed to findings of Nitecki and Bar-Maor in Israel<sup>2</sup>. They also reported that diagnosis beyond the first eight weeks of life, as was the case in our patient represents 5-25% of all cases<sup>2</sup>. At about four months of age, respiratory distress and vomiting became more frequent and was incorrectly diagnosed of recurrent bacterial pneumonia based on repeated chest findings. The respiratory distress observed in our patient could possibly be due to pulmonary hypertension. Pulmonary hypertension has been reported in cases of CDH as a result of restriction of blood flow through the lungs, thought to be caused by compression of the lungs<sup>4,5</sup>. Another reason for respiratory distress may be due to pulmonary hypoplasia or decreased lung volume, directly related to the presence of abdominal organs in the chest cavity<sup>2,4</sup>. This makes the lungs severely undersized, particularly on the side of the hernia and could lead to congenital thoracic deformity.

Preoperative imaging can predict the nature of CDH and the extent of diaphragmatic defect. In this case report the chest radiograph demonstrated a large stomach shadow indicative of a large diaphragmatic defect. If the hernial defect is small, direct suturing can close it, however, if it is large as was seen in our patient, then a mesh repair is required<sup>4</sup>. Recently CDH hernias have been successfully repaired using a laparoscopic approach<sup>4</sup>. Of note is that laparoscopic repair requires experience and expertise which is lacking in our health facility.

## Conclusion

Bochdalek's CDH is a rare malformation and may be difficult to diagnose by even the most experienced Paediatricians. Frequent respiratory distress observed in our patient has led to the incorrect diagnosis of recurrent bacterial pneumonia. Although highly sophisticated diagnostic tools exist, simple chest radiograph can provide sufficient information for a precise and rapid diagnosis of CDH.

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