

# The Late presenting Bochdalek hernia; A Case report and review of literature

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## ARTICLE INFO

Date Submitted: 22 January, 2021

Date Accepted: 11 March, 2021

## KEYWORDS

Bochdalek hernia, pediatrics, delayed manifestation, Congenital Diaphragmatic hernia

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## ABSTRACT

We report a 22-month-old boy who referred due to nausea, vomiting, abdominal pain and watery non-bloody diarrhea and after thorough evaluation, a large defect in the left postero-lateral side of diaphragm and presence of bowel loops, spleen, stomach and left lobe of liver in the left hemi-thorax were detected. So, he was operated and managed with the impression of Bochdalek hernia. We have also reviewed the similar case reports in the past 10 years, briefly, in order to map the presentations and clinical course of cases with Bochdalek hernia which were diagnosed late, for giving physicians a better insight on this issue.

## INTRODUCTION

Congenital Diaphragmatic hernia (CDH) is characterized by a defect in the integrity of diaphragm which leads to the herniation of abdominal components into the thoracic cavity. Genetic, environmental and nutritional factors are suggested as basic etiologic components of this congenital defect. Bochdalek hernias are referred to postero-lateral CHDs which are the most common type of them. CHDs are associated with life threatening health issues including lung hypoplasia and immaturity, pulmonary hypertension and ventricular dysfunction, hence the early diagnosis would be favorable. More than 50% of cases are diagnosed prenatally by ultrasound at a mean gestational age of 24 weeks, however, diagnosis of some cases may be delayed due to non-specific or late presentations of the herniation [1]. Here in, we intend to present a case of Bochdalek hernia in a 22-month-old boy with late presentations.

## CASE PRESENTATION

A 22-month-old male (First born child of a non-consanguineous marriage, full term normal delivery) presented to our tertiary hospital with recurrent episodes of vomiting and nausea, abdominal pain and watery non-bloody diarrhea. The patient was ill but not toxic. He was also dehydrated (no tears, sunken eye). In physical examination, there was no abdominal tenderness. Also, a chest CT scan was requested and performed confirming diagnosis of hiatal hernia. After clinical stabilization, this patient was operated on. During the surgery a wide diaphragmatic defect into the left thorax was seen and bowel loops, spleen, stomach and left lobe of liver were placed ectopically. Herniated viscera were returned to the abdominal cavity. He had been discharged after 1 week with a stable condition. During about one year of post operation follow up except one episode of early partial bowel obstruction that cured with conservative management, he was in good condition with good weight gain and his developmental milestones were appropriate to his age.



## CITE THIS PAPER AS

Imanzadeh F, Tehrani Fateh S, Alimoghadam S, Dara N, Rouzrokh M and Hosseini AH. The Late presenting Bochdalek hernia; A Case report and review of literature. *Sch Med Stud J*.2021;3(2):6-9

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## DISCUSSION

Bochdalek hernia may be lately diagnosed due to its unspecific or late presentations. Many CDHs are diagnosed prenatally through ultrasound or other prenatal diagnostic modalities [1]. Moreover, after birth, as a result of herniation of different abdominal organs into the thoracic cavity, problems associated with the malfunctioning of organs in the thorax or that of the herniated organs, may present as pulmonary, cardiac or gastrointestinal sign and symptoms leading to early diagnosis of hernia [1]. However, some cases remain undiagnosed until older ages. We have reviewed the case reports of delayed diagnosis of Bochdalek hernias in pediatrics in the last 10 years (table 1) and the most common presentations of these cases are as following: Irritability [2], dyspnea [2-4], tachypnea [4-6], cough [7, 8], fever [7-9], cyanosis [2, 4, 10] and gastrointestinal symptoms such as abdominal pain [10-15], nausea [13, 16]

and vomiting [10, 14, 16-18]. In our case, 22-month-old male was presented with recurrent episodes of vomiting and nausea, abdominal pain and watery non-bloody diarrhea. To the best of our knowledge, this is the first report of delayed diagnosis of Bochdalek hernia in a patient with a defect large enough for the left lobe of liver to be herniated.

Since the mentioned symptoms are nonspecific, physicians usually evaluate other differential diagnosis prior to CDHs. Therefore, CHD diagnosis may be delayed which increases the possibility of further complications subsequent to the hernia. We intend to attract physicians' attention to this diagnosis, in spite of its unspecific or late presentations even in the patients with large diaphragmatic defects.

## CONFLICT of INTEREST

The authors declare that they have no conflict of interest.

**Table 1.** A review of the delayed diagnosis of Bochdalek hernia in pediatrics during the last 10 years. (yo: Year old, mo: Month old, do: Day old, CPAM: Congenital Pulmonary Airway Malformation)

Age/sex	Symptoms	Physical examination	Hernia site and Organs inside the thorax	Other findings	Ref and year
19yo / female	Distention pain, vomiting, nausea	normal	pancreas	In the 3 <sup>rd</sup> semester of pregnancy	[16]/2020
12yo / female	abdominal pain	air entry was reduced in lower lobe of left lung with no adventitious sounds.	A defect of size 8.2cm was noted in posterior 2/3rd of left hemidiaphragm / stomach, spleen, splenic flexure of colon, left kidney, left adrenal gland	collapse consolidation of left lung parenchyma with mild to moderate left sided pleural effusion (post-surgery)	[11]/2020
3mo / female	irritability, dyspnea, and feed refusal	Cyanosis / reduced left lung breath sounds / barrel-shaped chest / scaphoid-like abdomen. apex of the heart displaced to the right / O <sub>2</sub> sat=44% / respiratory rate= 60/min / heart rate =160/min	defect at the posteriolateral part of the left diaphragm spleen, stomach, transverse colon, and greater omentum.	No other findings	[2]/2020
10mo / male	Recurrence Anemia	normal	spleen	RPS 19 mutation	[19]/2019
9yo / female	Weight loss, vomiting, epigastric pain	Dullness in stomach	Colon, spleen	No other finding	[12]/2019
3yo / male	upper respiratory tract infection / progressing respiratory distress and retching/ dyspnea	temperature of 39.5°C and tachycardia of 200/min	left-sided Bochdalek hernia / small intestine, spleen, and stomach into the chest	Gastric perforation at the lesser curvature / Bile-stained fluid in the thorax and abdomen	[3]/2018
2yo / male	fever of low to moderate grade and dry, non-productive cough of ten days	decreased movements on left side of chest / Breath sounds decreased in left infrascapular, interscapular and infraaxillary regions.	left postero-lateral aspect - Congenital diaphragmatic hernia / part of stomach, spleen, splenic flexure and part of transverse and descending colon	No other findings	[7]/2017
6mo / male	Respiratory distress and vomiting	Tachypenic and crepitant rales were heard in the basal segment of the hemithorax	kidney	No other finding	[17]/2017
1yo / male	fever, cough, hurried breathing	severe acute malnutrition, tachypnea, retractions, absent air entry on left axillary, infrascapular areas with coarse crepitation	bowel loops	No other findings	[7]/2017

**Table 1.** (cont.)

10yo/ male	Fever, cough	No related finding to hernia	Left colon	No other finding	[8]/ 2016
12yo / female	(recurrent) abdominal pain and nausea	unremarkable	Bochdalek hernia / stomach, spleen, and transverse colon	No other findings	[13]/ 2016
21do / female	Mild tachypnea and failure to thrive on day 20 of life	mild tachypnea / decreased air entry on right side / O <sub>2</sub> sat=90%	defect in posterior part of diaphragm / right kidney, adrenal gland, small bowel loops	No other findings	[6]/ 2015
17yo / female	Vomiting and abdominal pain, cyanosis	Abdominal distention	2 cm diameter defect in the central part of the diaphragm	No other finding	[10]/ 2015
6.5yo / female	Spastic tetraparesis, vomiting	Absence of respiratory sound	Small intestinal and colon segments in thorax	No other finding	[18]/ 2015
5yo/ female	Dyspnea and tachypnea, cyanosis	Decrease sound of the left side of the chest	Dilated Colonic loop in thorax	No other finding	[4]/ 2015
3mo / female	worsening tachypnea and fatigue	No related findings to hernia, presented for cardiac surgery	Undergone heart surgery and discharged after 6days, Bochdalek diagnosis was made during postmortem evaluation	defect in the left posterior hemidiaphragm / stomach	[5]/ 2015
1yo / male	Occasional chills and rigor in past 4 months	normal	Left kidney in thorax beside hearth	No other finding	[20]/ 2014
2yo / male	Gastric volvulus	Abdominal tenderness	kidney	No other finding	[21]/ 2013
3yo / male	Abdominal pain and vomiting	Cardiac arrest and death	Transverse colon and upper pole of the spleen	No other finding	[14]/ 2013
6mo / male	fever, intermittent respiratory and gastrointestinal symptoms	dehydrated, scaphoid abdomen, bowel sound in the chest	diaphragmatic defect measuring 10cm by 6cm / spleen, transverse colon, stomach, omentum	No other findings	[9]/ 2012
6yo / male	nonspecific abdominal pain	Abdominal tenderness	right posterolateral Bochdalek hernia / Colon loops	intrathoracic acute appendicitis	[15]/ 2012
19yo / female	CPAM	Respiratory distress	Terminal bronchial	CPAM	[22]/ 2012

### FUNDING

The authors received no specific funding for this work.

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