DOAJ DIRECTORY OF OPEN ACCESS JOURNALS
P-ISSN: 2548-5962
E-ISSN: 2548-981X
https://ojs.unud.ac.id/index.php/jbn

CASE REPORT

JBN Jurnal Bedah Nasional

Right-Sided Congenital Diaphragmatic Hernia Presenting with Liver, Ileum, Caecum, & Transverse Colon Herniated into Thoracic Cavity in 2 years old Child: A Rare Case Report

Elsa Syafira Hidayah[1*], Joshua Gaza Dirgantara Tandirogang[1], David Hermawan Christian[2], Ivan Joalsen[2], Michael Caesario[2]

[1]Intern Doctor of Thoracic, Cardiac, and Vascular Surgery, Abdul Wahab Sjahranie Hospital Samarinda, East Borneo, Indonesia
[2]Division of Thoracic, Cardiac, and Vascular Surgery, Universitas Mulawarman, Abdul Wahab Sjahranie Hospital Samarinda, East Borneo, Indonesia

*Corresponding author: elsasyafiraa@gmail.com

ABSTRACT

Aim: To report the rare case of right-sided congenital diaphragmatic hernia, and discuss the management and its outcomes. **Case:** This case reports patients with: A 2-year-old male infant came to emergency room with complaints of fever, shortness of breath, and cough with phlegm that had gotten worse three days before admitted to the hospital. The patient was born by vaginal delivery at term gestational age with a weight of 3900 g. In the emergency room, a complete blood count was performed and the results obtained were leukocytes 11,910/µL, hematocrit 37.2%, and platelets 222,000. This situation causes organs in the abdominal cavity to be pushed into the thoracic cavity. The diagnosis of this condition can usually be made when the patient is still a baby, both clinically and radiologically. The appropriate treatment that can be done for patients with this condition is surgery. **Conclusion:** In this case report, we describe a patient with a right congenital hernia which was confirmed based on clinical findings and radiology results. The patient underwent surgery in the form of a hernia repair. This case report also discusses the management of a patient with a right congenital hernia.

Keywords: diaphragmatic hernia, congenital hernia, hernia repair
DOI: https://doi.org/10.24843/JBN.2026.v10.i01.p03

INTRODUCTION

Congenital diaphragmatic hernia or congenital diaphragmatic hernia is a condition where there is a defect in the diaphragm which causes the abdominal organs to protrude into the thoracic cavity, apart from being congenital this can also occur due to trauma.[1]

Congenital hernias can be divided into several according to their position, such as Bochdalek hernia and Morgangi hernia. Bochdalek hernia (Posterolateral hernia) is a hernia that is usually located posterolateral to the left side of the diaphragm. The organs that usually protrude into the thoracic cavity are the stomach and small intestine. This type of hernia is also the most commonly found, around 80-90% of all hernia cases.[2]

Morgagni's hernia is a retrosternal or parasternal hernia on the right side, this type of hernia usually does not cause clinical manifestations in newborn babies. Usually, the liver and small intestine protrude into the thoracic cavity. Hernia cases are classified as rare, around 2-5% of hernia cases.[3] The prevalence of hernias is around 2.4 – 4.1 per 10,000 pregnancies where the ratio of male to female sufferers is found to be 1:0.69.[4] Congenital diaphragmatic hernia (CDH) is a common birth defect impairing normal lung development leading to pulmonary hypoplasia and pulmonary hypertension.[5]

The diagnosis of congenital diaphragmatic hernia can be made prenatally or postnatally. In developed countries, high detection rates of congenital diaphragmatic hernia have been reported (59%) and gestational age at diagnosis is more than 24 weeks in half of cases diagnosed prenatally. However, prenatal detection of CDH is rare in developing countries due to inadequate facilities. Ultrasound features consistent with this condition include polyhydramnios, absence of gastric vesicles or intrathoracic, shift of the mediastinum and heart away from the side of the herniation, small fetal abdominal circumference, and rarely fetal hydrops. Postnatal diagnosis can be made by looking at complaints that appear later in life. The most frequent symptoms include respiratory symptoms, gastrointestinal symptoms, and no symptoms. The majority of right-sided lesions presented with respiratory symptoms, whereas for left-sided lesions, the incidence of respiratory and GI symptoms was similar.[6]

The treatment option that can be done is surgery. Surgery is recommended to avoid entrapment and strangulation of the abdominal organs. Surgery can be performed if the patient's clinical condition and cardiopulmonary condition are stable. There is no time limit for postponing surgery due to the patient's unstable condition. The patient's prognosis depends on complications and the availability of adequate facilities.[7]

CASE REPORT

A 2-year-old male infant came to emergency room with complaints of fever, shortness of breath, and cough with phlegm that had gotten worse three days before admitted to the hospital. On examination, the respiratory rate was 45 breaths per minute, heart rate was 160 beats per minute, body temperature was 38oC, and had pulse oximetry reading of 70% on room air. He was noted to have decreased breath sound on the left side of the chest and crackles in both lung fields.

The patient was born by vaginal delivery at term gestational age with a weight of 3900 g. There were no complaints at birth. During the third trimester, the patient's mother underwent an antenatal ultrasound that demonstrated normal fetal anatomy. At the age of 1 year, the parents took the patient to the pediatric clinic with complaints of not gaining weight and getting tired easily. At the doctor's suggestion, the patient underwent a thoracic and abdominal X-ray (Figure 1) as well as a chest CT scan (Figure 2) with contrast. There was an impression of a right diaphragmatic eventration and grade IV hydronephrosis with an impression of UPJ (Ureteropelvic junction) obstruction. In November 2022, the patient underwent kidney surgery and the surgeon said the patient's liver had risen to the thoracic cavity but the doctor felt that surgery was not necessary yet. In the emergency room, a complete blood count was performed and the results obtained were leukocytes 11,910/µL, hematocrit 37.2%, and platelets 222,000.

The patient was hospitalized and given Ampicillin-Sulbactam and Gentamicin by a pediatrician. After 9 days of stabilization, the patient was prepared to undergo hernia repair surgery. The operation is carried out by collaboration with pediatric surgeon, thoracic-cardiac and vascular surgeon, and cardiovascular anesthesia. The pediatric surgeon performed a laparotomy with a Chevron incision to restore the position of the ileum, cecum and transverse colon. The thoracic, cardiac and vascular surgeon performed a lateral thoracotomy to help free the liver from rising into the thoracic cavity. After all the abdominal organs are returned to their normal position, the diaphragmatic

defect is closed with primary repair using non-absorbable suture.

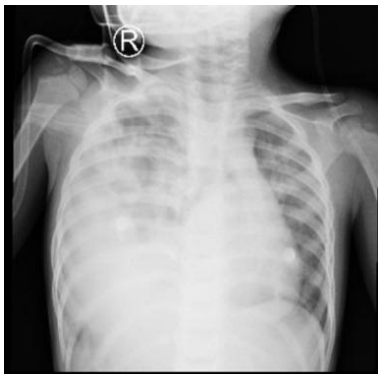

Figure 1. A chest X-ray was obtained and demonstrated a right-sided congenital diaphragmatic hernia

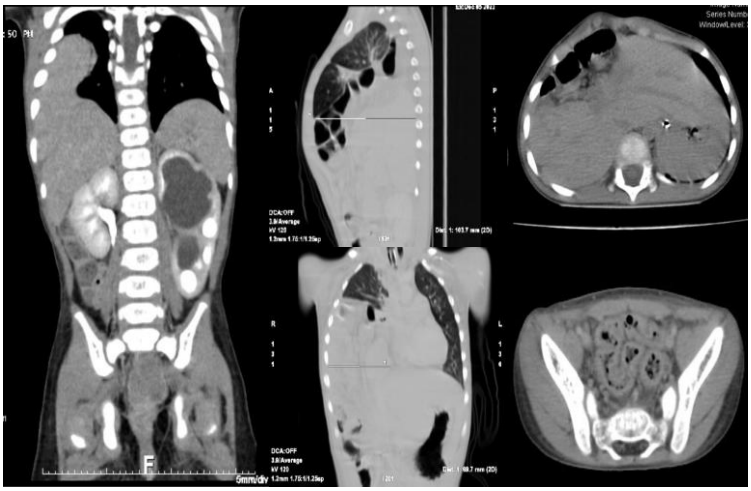

Figure 2. A thoracoabdominal contrast CT scan was also obtained and showed the impression of a right-sided diaphragmatic hernia, left grade II hydronephrosis, and sacral spina bifida

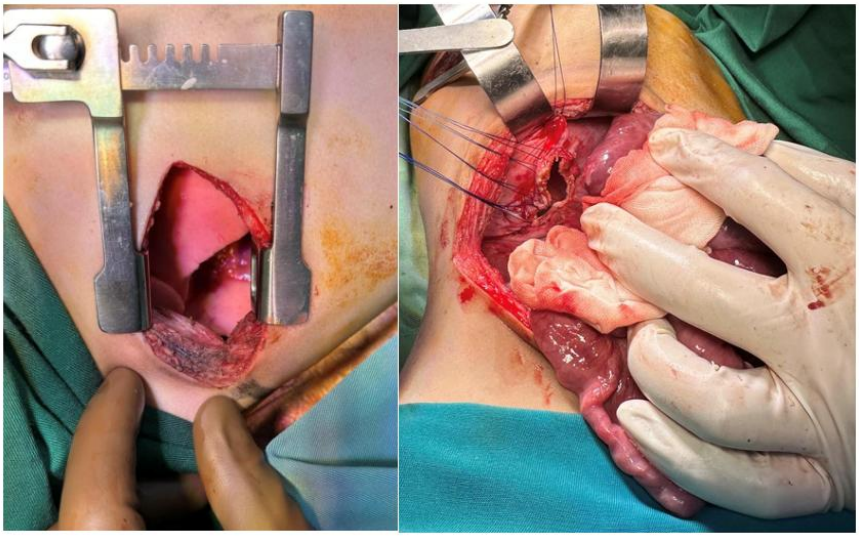

Figure 3. An evaluation is carried out to ensure that the lungs are fully expanded and that no abdominal organs have entered the thoracic cavity. After 3 hours of surgery, the patient was transferred to the PICU for postoperative monitoring.

DISCUSSION

In congenital diaphragmatic hernia, other malformations can also be found such as hydronephrosis, renal agenesis, congenital heart disease, and spina bifida.[8] In our case, the patient's accompanying malformations other than diaphragmatic hernia were hydronephrosis and sacral spina bifida.

Diaphragmatic hernias can be found when the patient is just born, and usually the initial symptom is respiratory distress in the neonate.[9] Despite advances in medical technology, neonatal CDH still has a high mortality rate. In this case, the patient was initially diagnosed with eventration of the diaphragm and protrusion of the liver into the thoracic cavity, but the patient had not experienced any significant complaints.

Right diaphragmatic hernia has a lower prevalence rate compared to left hernia. In cases of right hernia, liver herniation is also often found and this is an indicator of a poor prognosis.[10] In the results of studies of right diaphragmatic hernias, pulmonary system morbidity is often found which causes an increased need for pulmonary vasodilators and the need for thoracostomy procedures, with this causes an increased risk of pulmonary hypoplasia and pulmonary hypertension.[11] With the application of the endoscopy technology and a gain in surgical skills, endoscopic repairs of right diaphragmatic defects could be the preferred method by which to treat them.[12]

Radiological examination of a right diaphragmatic hernia with a chest x-ray can usually reveal images of intestinal formation in the thoracic cavity or changes in the form of intra-thoracic gas with repeated chest x-rays taken, the use of a barium enema can also be used to confirm the diagnosis.[6] CT scan examination is the gold standard for diaphragmatic hernia.[13]

There are several surgical techniques for diaphragmatic hernia. The patient underwent a laparotomy to remove the intestines and a thoracotomy to help reduce the liver. Defect closure can be done using non-absorbable threads or using prosthesis materials such as PTFE or Goretex. Because the defect in this patient was not too large, the defect was closed with primary suture using non-absorbable thread.

CONCLUSION

Right-sided congenital diaphragmatic hernia is a rare clinical condition. Often patients do not experience complaints and antenatal examinations are difficult to distinguish from normal structures, making this condition difficult to diagnose early. Doctors should keep in mind and be aware of rare conditions like this when making a diagnosis.

ACKNOWLEDGEMENT

The authors would like to express their gratitude to the surgical, nursing, and emergency teams involved in the acute management, reconstruction, and follow-up of these patients, as well as to the institution for its continuous support of clinical and academic activities.

DISCLOSURE

The authors declare no conflict of interest related to this case series.

REFERENCES

1. Kayleigh S, Saran L, Nagendra G. Diaphragmatic Hernia. Treasure Island (FL): *StatPearls Publishing*. 2025. Available at: https://pubmed.ncbi.nlm.nih.gov/30725637/
2. Longoni M, Pober BR, High FA, Adam MP, Bick S, Mirzaa GM, *et al*. Congenital Diaphragmatic Hernia

Overview. Chapter 1. Clinical Characteristics of Congenital Diaphragmatic Hernia Clinical Description. *Gene Reviews*. 2019:1–26.
3. Svetanoff WJ, Sharma S, Rentea RM. Morgagni Hernia. Treasure Island (FL): StatPearls Publishing. 2023. Available at: https://www.ncbi.nlm.nih.gov/books/NBK557501/
4. McGivern MR, Best KE, Rankin J, Wellesley D, Greenlees R, Addor M-C, *et al.* Epidemiology of congenital diaphragmatic hernia in Europe: a register-based study. *Arch Dis Child Fetal Neonatal Ed.* 2015;100(2):F137-44.
5. Danzer E, Massey SL, Flohr SJ, Mathew L, Hoffman C, Abramson A, *et al.* Extracorporeal Membrane Oxygenation for Neonates With Congenital Diaphragmatic Hernia: Prevalence of Seizures and Outcomes. *Pediatric Critical Care Medicine*. 2023;24(5):E224–E235.
6. Kesieme EB, Kesieme CN. Congenital diaphragmatic hernia: review of current concept in surgical management. *ISRN surgery*. 2011;2011:974041.
7. Tovar JA. Congenital Diaphragmatic Hernia. *Orphanet J Rare Dis*. 2012;7(1):1.
8. Yuh DD, Vricella LA, Yang SC, Doty JR (eds). *Johns Hopkins Textbook of Cardiothoracic Surgery*. New York, NY: McGraw-Hill Education. 2014.
9. Gujar A, Rodrigues DD, Patil K, Tambe U, Sinha S, Bhushan A. Rare case report-congenital diaphragmatic hernia presentation in adult. *Indian J Surg.* 2011;75(Suppl 1):44-6.
10. Parate LH, Geetha CR, Vig S. Right sided congenital diaphragmatic hernia: A rare neonatal emergency. *Saudi* J Anaesth. 2015;9(2):227–9.
11. Partridge EA, Peranteau WH, Herkert L, Rendon N, Smith H, Rintoul NE, *et al.* Right- versus left-sided congenital diaphragmatic hernia: a comparative outcomes analysis. *Journal of pediatric surgery*. 2016;51(6):900–2.
12. Aihole JS. Congenital right diaphragmatic defects: Our institutional experience. *Afr J Paediatr Surg.* 2021; 18(3):133–8.
13. Giuffrida M, Perrone G, Abu-Zidan F, Agnoletti V, Ansaloni L, Baiocchi GL, *et al.* Management of complicated diaphragmatic hernia in the acute setting: a WSES position paper. *World J Emerg Surg*. 2023;18(1):1–12.