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INTESTINAL OBSTRUCTION: AN UNCOMMON PRESENTATION OF CONGENITAL DIAPHRAGMATIC HERNIA IN ADULTS

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ABSTRACT **Introduction:** Congenital diaphragmatic hernia is a relatively uncommon disease typically manifesting in the neonatal period; its identification in adults is rare. **Case Report:** We report a case of a 20yr old female with congenital diaphragmatic hernia with a past history of pulmonary tuberculosis, who presented with recurrent gastric and respiratory symptoms and the anaesthetic challenges faced during the case. **Conclusion:** Managing a diaphragmatic hernia with intestinal obstruction is difficult, especially in a young patient with pulmonary tuberculosis. Exploratory laparotomy and diaphragmatic hernia repair were successful, but lung collapse occurred postoperatively which was treated with timely imaging and flexible bronchoscopy. The stabilization of the patient necessitated close monitoring and early intervention, underscoring the significance of multidisciplinary approach in surgery and postoperative care.

KEYWORDS : Congenital diaphragmatic hernia, adult, intestinal obstruction, lung collapse.

INTRODUCTION

Congenital diaphragmatic hernia (CDH) is a developmental anomaly characterized by an atypical aperture in the diaphragm, which results in herniation of abdominal organs into the thoracic cavity. Though usually idiopathic, it is thought to be caused by a mix of genetic and environmental factors.

Having an incidence of 1-5 per 1000 live births [1], it is primarily identified in neonates, presenting as respiratory failure, cyanosis, and a scaphoid abdomen. The diagnosis of CDH in adults is uncommon and usually arises when the illness remains asymptomatic during childhood. About 5-25% of all CDHs are diagnosed late; often found incidentally during imaging tests like chest X-rays or abdominal ultrasounds done for other reasons. [2] The herniation of abdominal organs through the diaphragm may result in significant complications such as respiratory distress due to lung compression, gastric volvulus, intestinal obstruction, or, in severe instances, intestinal perforation leading to peritonitis. Symptoms may encompass abdominal discomfort, nausea, vomiting, respiratory distress, and systemic indicators of infection including fever. [1]

The fact that late-presenting CDH can exist in adults is clinically relevant, because these patients often have high survival rates, especially if they undergo surgery on an emergency basis, to restore diaphragmatic integrity and relocate the abdominal organs. However, their prognosis can be affected by comorbidities such as persistent respiratory conditions or gastrointestinal complications, which may hinder treatment and rehabilitation. Postoperative therapy encompassing respiratory support, pain management and physical rehabilitation is essential for enhancing recovery and minimizing the likelihood of long-term problems [3].

Very few cases of CDH in adults are reported in literature and hardly any presenting as intestinal obstruction. We present the case of a young female diagnosed with a congenital diaphragmatic hernia accompanied by intestinal obstruction necessitating urgent surgical exploration and the subsequent management. Proper postoperative care was essential in managing complications and facilitating recovery. This report highlights the importance of a heightened index of suspicion and thorough care in addressing late-presenting congenital diaphragmatic hernia to enhance outcomes and guarantee optimal quality of life for affected persons.

CASE REPORT:

A 20yr old female presented with generalised abdominal pain and constipation for 4 days, accompanied by multiple episodes of vomiting. She gave h/o pulmonary tuberculosis four years prior, requiring ICU admission in view of breathlessness. She was successfully treated with anti-tubercular therapy for one year. At presentation, she reported no symptoms indicative of recurrence of tuberculosis such as chronic cough, fever, or weight loss.

On examination, the patient had an average build with a BMI of 22kg/m2. She was afebrile, but had tachycardia (HR 110/min) and tachypnoea (RR 22/min). Her BP was 120/70mmHg and SpO2 98% on room air. The respiratory examination revealed decreased air entry in the left lower zones. The cardiovascular system and airway examination were unremarkable. She had distension of abdomen with generalised tenderness and hyperperistaltic bowel sounds.

All routine haematological investigations including CBC, LFTs, RFTs, serum electrolytes and coagulation profile were within normal limits.

An abdominal ultrasound showed marked gaseous distension and old healed liver lesions. A subsequent CT scan abdomen revealed a 2cm x 2cm defect in the central portion of the left hemidiaphragm with herniation of omentum and splenic flexure of the colon, causing significant narrowing of lumen with large bowel obstruction and dilatation of transverse colon, ascending colon and ileal loops. There was passive atelectasis of the medial basal segment of the left lower lobe and minimal fluid in the pelvis.

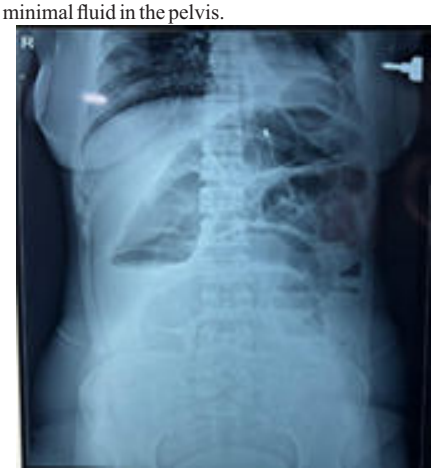

Fig. 1: Preoperative CXR showing dilated bowel loops with possible herniation into thoracic cavity

The patient was scheduled for emergency laparotomy in view of intestinal obstruction with diaphragmatic hernia. After obtaining written informed consent, confirming availability of ICU bed and adequate blood, and preoperative nebulization, the patient was taken

into the operation theatre and standard ASA monitors were attached. A 14Fr Ryle's tube, in situ from the ward, was aspirated prior to induction of anaesthesia.

The patient was preoxygenated with 100% oxygen and premedicated with inj. glycopyrrolate 0.2mg i.v and inj. fentanyl 100mcg i.v. She was induced with inj. propofol 100mg i.v and inj. succinylcholine 100mg i.v and intubated with a cuffed ETT no. 7.0 using RSI technique. Anaesthesia was maintained with sevoflurane 1-2% in air: oxygen mixture and intermittent doses of inj. Atracurium i.v. She received inj. Paracetamol 1gm i.v and inj. Diclofenac 75 mg i.v. for postoperative analgesia.

The surgery lasted 5 hours and was uneventful. The diaphragmatic hernia was reduced, adhesiolysis done and the defect in the diaphragm was closed. Intraoperatively, the vital parameters were maintained within normal limits. Blood loss was 400ml, urine output was 500ml and she was infused 1500ml Ringer's lactate and 400ml colloid.

Postoperatively, patient was shifted to ICU, sedated and paralysed, with ETT in situ for observation and mechanically ventilated overnight. She was successfully extubated on postoperative day 1.

Fig.2: Postoperative CXR On First Postoperative Day

On second postoperative day, patient developed tachypnoea (RR 40-44 breaths/min), tachycardia (HR 110 -120 bpm) with SpO2 98% on RA.

By the third postoperative day, decreased air entry on the left side was noted and chest X-ray showed left lung collapse. This was validated by a bedside ultrasound examination of the chest, which showed minimal pleural effusion with collapse of the left lung. There were no significant sonographic air bronchograms. The left hemidiaphragm showed no discernible respiratory action.

Fig.3: CXR on third postoperative day showing lung collapse on left side

An emergency flexible bronchoscopy done under total intravenous anaesthesia to evaluate the cause of lung collapse revealed that both vocal cords were mobile, but the left main bronchus was found to contain a significant amount of thick mucus, which was successfully aspirated. Thick plug of mucus was observed on the right side also, which was similarly aspirated. The left lower lobe bronchus opening was found to be hypoplastic (< 2mm) resulting in inadequate inflation of the lower lobe. Following bronchoscopy, patient was started on nebulization with Mucomix (acetylcysteine) along with chest physiotherapy and breathing exercises. This resulted in improved air entry in bilateral lung fields and SpO2 100%.

The patient's condition was meticulously monitored and appropriate treatment was administered in order to facilitate her recovery. She was shifted to ward by day 5 and successfully discharged subsequently.

DISCUSSION

CDH is the herniation of abdominal organs into the thoracic cavity via a compromised region or a defect in the diaphragm. Diaphragmatic hernias are predominantly of two types: posterolateral (Bochdalek hernia) and sternocostal (Morgagni hernia) forms the most commonly observed being a Bochdalek hernia, which results from insufficient closure of the posterolateral pleuroperitoneal membrane.

Left sided diaphragmatic defects (85%) are more prevalent than the right, resulting in the displacement of abdominal contents, such as stomach, bowel loops, liver, spleen, or adipose tissue into the thoracic cavity. A right-sided posterolateral hernia is exceedingly uncommon, probably due to the presence of the liver on the right, and due to early closure of the diaphragm on the right side [4].

The foramen of Morgagni hernias are uncommon and more often right sided, being located behind the sternum and in front of the mediastinum. Factors that elevate intra-abdominal pressure like obesity, trauma, and weightlifting are associated with the foramen of Morgagni hernia in adults [5].

In newborns, CDH typically occurs due to improper/ incomplete fusion of the septum transversum or the pleuroperitoneal membrane and can be detected by prenatal ultrasonography in 50-90% of cases [6]. These babies present with acute pulmonary symptoms like respiratory failure, cyanosis and a scaphoid abdomen. Despite advancements in critical care, CDH is associated with a relatively unchanged death rate.

Occasionally, CDH may manifest later, in childhood/ adulthood, exhibiting mild respiratory symptoms, potentially due to the absence of lung hypoplasia, or it may be completely asymptomatic, when it is accidentally discovered in plain X-rays or CT scans for unrelated symptoms [7]. Mechanical or pressure alterations in the thoracoabdominal cavities may trigger a visceral herniation. In adults, trauma is found to be the main cause of abdominal viscera herniation.

The presentation of CDH may range from chronic, non-specific symptoms to abdominal emergencies. It may manifest with gastrointestinal symptoms like intermittent abdominal pain, vomiting, and dysphagia. Respiratory symptoms typically include dyspnoea, cough and thoracic discomfort. [8] Symptoms may be either intermittent or acute, contingent upon the degree of abdominal visceral herniation in the chest. An acute presentation typically results from imprisonment, blockage, or strangulation of the herniated viscera.

A combination of chest X-rays, CT scan, MRI and upper GI and intestine double contrast examinations determine the diagnosis. CT scan may reveal fat or soft tissue touching the top of the diaphragm, a unique posterolateral position of a mass on the hemidiaphragm, a diaphragmatic discontinuity around the mass and the same amount of density above and below the diaphragm through the defect. Bochdalek hernias may be mistakenly identified as pleural effusion, pneumonia, tension pneumothorax, lung cysts, or atelectasis. [9]

Late-presenting CDH is sometimes challenging to identify resulting in widespread treatment delays. Carefully examining chest X-rays and looking for bowel segments crossing the diaphragmatic defect can prevent an incorrect diagnosis and an unwanted delay in treatment. Inserting a feeding tube and administering contrast material can alleviate the ambiguity between congenital diaphragmatic hernia and pneumonia /pneumothorax. [10]

The management of a Bochdalek hernia involves the reduction of abdominal contents and the repair of the defect via laparotomy or thoracotomy. Both laparoscopic and thoracoscopic repairs of Bochdalek hernias have been successfully documented. The prognosis of adult patients with Bochdalek hernia is contingent upon the nature of the clinical presentation. A delayed diagnosis of CDH may result in

significant morbidity. [11]

CONCLUSION

This case highlights the difficulties in managing a diaphragmatic hernia with intestinal obstruction, especially in a young patient with a history of pulmonary tuberculosis. The patient successfully underwent exploratory laparotomy and diaphragmatic hernia repair; however, postoperative respiratory complications including lung collapse occurred. Timely diagnostic imaging and interventions, such as flexible bronchoscopy, were critical in addressing the postoperative lung collapse. Close monitoring and early intervention were essential in stabilising the patient, highlighting the significance of a multidisciplinary approach in addressing surgical and postoperative challenges.

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REFERENCES

1. Gallot D, Boda C, Ughetto S, Perthus I, Robert-Gnansia E, Francannet C, Laurichesse-Delmas H, Jani J, Coste K, Deprest J, Labbe A. Prenatal detection and outcome of congenital diaphragmatic hernia: a French registry-based study. Ultrasound in Obstetrics and Gynecology: The Official Journal of the International Society of Ultrasound in Obstetrics and Gynecology. 2007 Mar;29(3):276-83.
2. Topor L, Pătrăncuş T, Caragaţa R, Moga A. Left congenital diaphragmatic hernia–Case report. Chirurgia (Bucur). 2015 Jan 1;110(1):84-7.
3. Losty PD. Congenital diaphragmatic hernia: where and what is the evidence? In Seminars in pediatric surgery 2014 Oct 1 (Vol. 23, No. 5, pp. 278-282). WB Saunders.
4. Congenital posterolateral diaphragmatic hernia in an adult. Losanoff JE, Sauter ER. Hernia. 2004; 8:83–85. doi: 10.1007/s10029-003-0166-5. [DOI] [PubMed] [Google Scholar]
5. Bianchi E, Mancini P, De Vito S, Pompili E, Taurone S, Guerrisi I, Guerrisi A, D'Andrea V, Cantisani V, Artico M. Congenital asymptomatic diaphragmatic hernias in adults: a case series. Journal of medical case reports. 2013 Dec; 7:1-8.
6. Nakayama DK, Harrison MR, Chinn DH, Callen PW, Filly RA, Golbus MS, De Lorimier AA. Prenatal diagnosis and natural history of the fetus with a congenital diaphragmatic hernia: initial clinical experience. Journal of pediatric surgery. 1985 Apr 1;20(2):118-24.
7. Tovar JA. Congenital diaphragmatic hernia. Orphanet journal of rare diseases. 2012 Dec; 7:1-5.
8. Report of a case of bochdalek hernia in an adult presenting as chronic cough: review of literature and discussion. Vichare S, Jawade K, Chaudhari K, Kamble S, Kandukuri T, Bhalgat M. Int Surg J. 2023;10:1717–1720. [Google Scholar]