CONGENITAL DIAPHRAGMATIC HERNIA IN AN ADOLESCENT – A RARE PRESENTATION

Anisha Mettu[1], Rabinarayan Guru [2]

[1] *Senior resident in Department of general surgery, GMCH Sundargarh*

[2] *Associate Professor, Department of General surgery, GMCH, Sundargarh*

Corresponding Author:

Dr. Anisha Mettu, Senior resident, Department of general surgery, GMCH Sundargarh, anishamettu@gmail.com

Abstract:

Diaphragmatic hernia a condition that is usually diagnosed in newborns, can sometimes present very late in life and the diagnosis can be incidental or in an emergency presentation which requires high suspicion to diagnose clinically. Acquired diaphragmatic hernia is usually preceded by a history of trauma. This case report gives a glance at presentation of an adolescent with clinical features of subacute intestinal obstruction and respiratory distress but was found to have a diaphragmatic hernia intraoperatively.

Key words Congenital diaphragmatic hernia, respiratory distress syndrome, intestinal obstruction.

INTRODUCTION:

Congenital Diaphragmatic hernia (CDH) is herniation of abdominal contents into the thoracic cavity due to developmental defect in the diaphragm. It can be of congenital or acquired type. Congenital diaphragmatic hernia is of 3 types – Bochdalek (more common, left > right, defect is posterolateral); Morgagni (less common, defect is anteromedial); central type (very rare)[1]. The diagnosis of CDH is usually in the antenatal period or in the 1st week after birth[2]. Smaller defects can be detected a little later[3]. Herniation of abdominal contents into the thoracic cavity causes lung hypoplasia and pulmonary hypertension[4]. Missing characteristic features at presentation makes it difficult to diagnose it clinically.

CASE DETAILS:

HISTORY:

A 17-year male patient presented to the ER with pain abdomen for 10 days, shortness of breath on exertion for 8 days, non-passage of stool and flatus for 8 days, vomiting for 7 days with no history of trauma. There is no family history of similar complaints and patient didn't undergo any surgical procedures before presenting with this complaint.

INITIAL EXAMINATION AND INVESTIGATIONS:

On examination: Patient was conscious and oriented, Temperature- 101^0F, BP – 94/60 mmHg, PR – 110/min, Spo2 – 88% in room air, RR-20

Breaths per minute, no Pallor/Icterus/Cyanosis/Clubbing/Lymphadenopathy/Pedal oedema.

Per abdominal examination – Distended, non-tender, no guarding/rigidity, No Organomegaly, No Shifting dullness, Bowel sounds are absent. On DRE – Normal rectal mucosa, No growth palpable, No stool stain over gloves. Examination of chest shows shift of trachea to right side, dullness in left lower lung fields with absent breadth sounds in left hemithorax, on the right side of the chest, there was a slight increase in the breath sounds. CVS – both heart sounds heard towards right side After the initial resuscitation, chest X Ray PA view & lateral view, erect X Ray abdomen, Ultrasonography of thorax, abdomen, pelvis and necessary blood investigations were done. Chest X Ray PA view showed fluid level on the left side and mediastinum shifted to right side. X ray abdomen showed dilated bowel loops and air fluid levels in the bowel loops. Ultrasonography of thorax showed herniation of distended fluid filled large bowel loops (10 cms) along with small parts of mesentery into the left thoracic cavity causing shifting of heart to right side. In the blood investigations, there was slight leucocytosis [TLC - 10660/microlitre, monocytes – 590/microlitre - indicates a chronic inflammation (0 to 200 being the normal range)]. With these findings exploratory laparotomy was planned.

OPERATIVE PROCEDURE:

Exploratory laparotomy was started with upper midline vertical laparotomy incision under general anaesthesia. Intraoperatively, loop of transverse colon was found to be herniated into the left thoracic cavity and it was found to be gangrenous and perforated into the left thoracic cavity. The gangrenous and ruptured transverse colon was reduced into abdominal cavity. Left side tube thoracostomy was done. Primary repair and double breasting of left sided diaphragmatic defect with 1-0 polypropylene suture was done. Proximal transverse end colostomy was done and patient was shifted to post operative-ward for close monitoring.

POST OPERATIVE PERIOD:

On POD-2 Colostomy started functioning. Initial intercostal drainage was feculent which gradually changed to serous by POD-6.

On POD-9 Intercostal drainage (ICD) removed after the drainage quantity reduced to less than 50 ml for 3 consecutive days. Colostomy reversal done 3 months later

DISCUSSION:

Diaphragm lies between the thoracic cavity and abdominal cavity anatomically separating both the cavities and it has multiple sources of origin (septum transversum, body wall muscles,

pleuroperitoneal membranes, dorsal mesentery of oesophagus). It anatomically divides the high-pressure abdominal cavity from the low-pressure thoracic cavity. Any lack in the developmental stage leads to a defect in a part of diaphragm and can lead to herniation of the contents of abdomen to thoracic cavity which is called diaphragmatic hernia[4]. Typically, CDH is diagnosed antenatally by means of radiology[3] or in the first week after birth clinically[2]. Some of the features of CDH are scaphoid abdomen, respiratory distress[2] shift of bowel sounds to thoracic cavity and pulmonary hypoplasia. In this particular case, absence of the typical features of CDH and striking presentation of patient as Sub acute intestinal obstruction with mild respiratory distress. Presence of air fluid level in the CXR PA view in left hemithorax that is similar to pleural effusion and multiple air fluid levels in large intestine in abdominal X Ray that is similar to intestinal obstruction also work against suspecting this patient to have a CDH. Absence of bowel sounds in both abdomen and chest which was later corroborated by the intraoperative finding of ruptured transverse colon also played against making the diagnosis of diaphragmatic hernia.

IMAGES FOR REFERENCE:

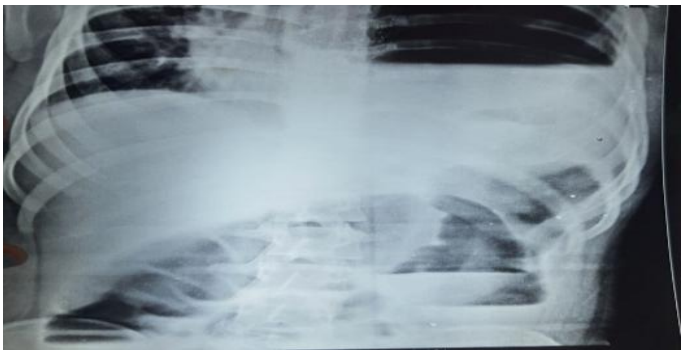

Figure 1: X ray abdomen (erect) with both domes of diaphragm and a part of chest showing air fluid level in left hemithorax, shift of mediastinum to the right, airfluid levels in the abdominal cavity with dialated bowel loop.Fluid level in the left hemithorax with mediastinum shifted to right.

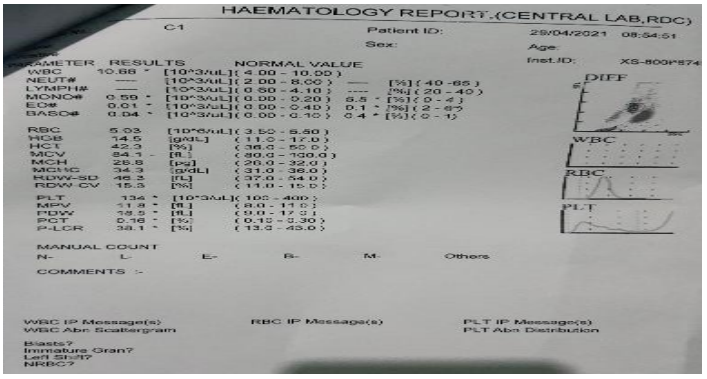

Figure 2: Hemogram mild leuocytosis and increase in monocyte count

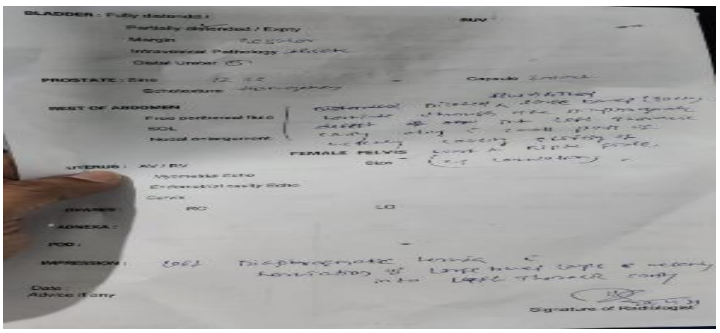

Figure 3: Ultrasound thorax and abdomen

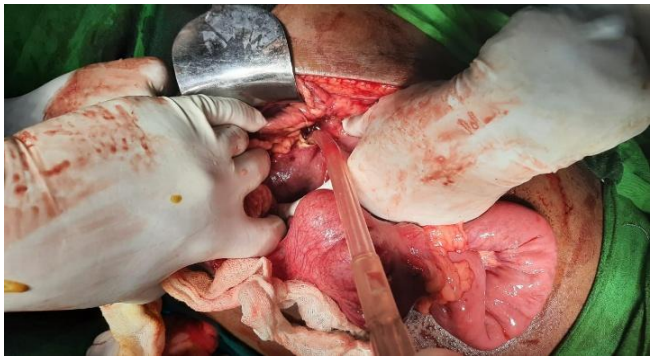

Figure 4: Intra operative finding – perforation of transverse colon

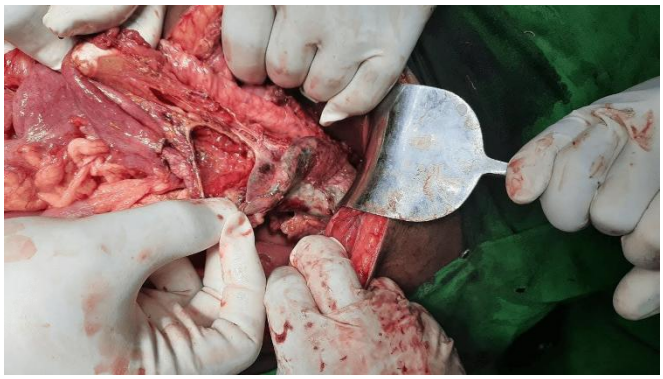

Figure 5: Perforated and Gangrenous Transverse Bowel Loop

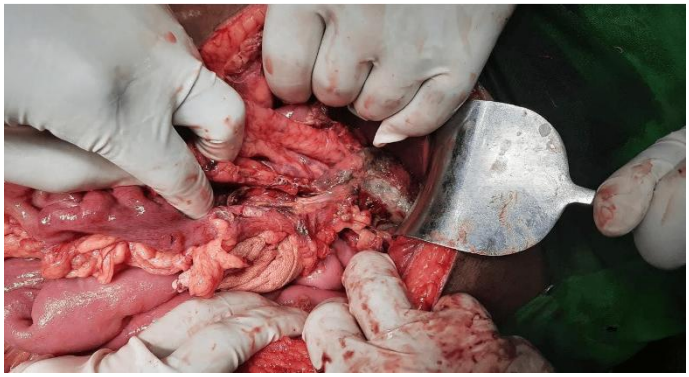

Figure 6: Herniated Gangrenous Transverse Bowel Loop

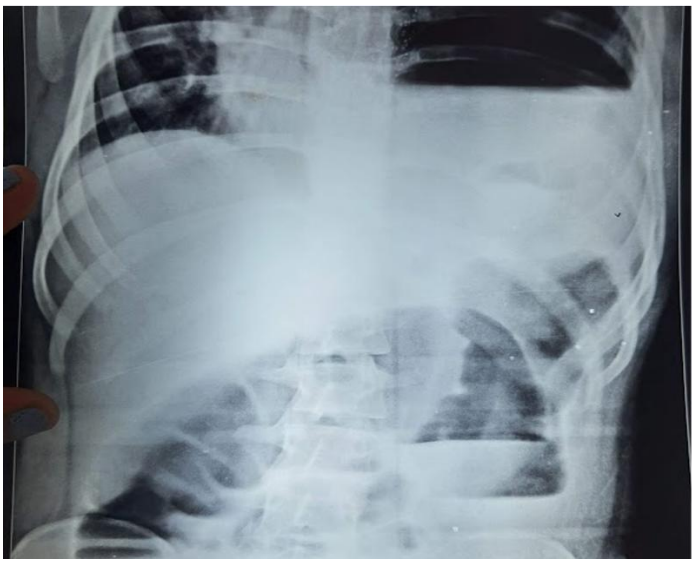

Figure 7: Dilated Large Bowel Loop with air fluid levels

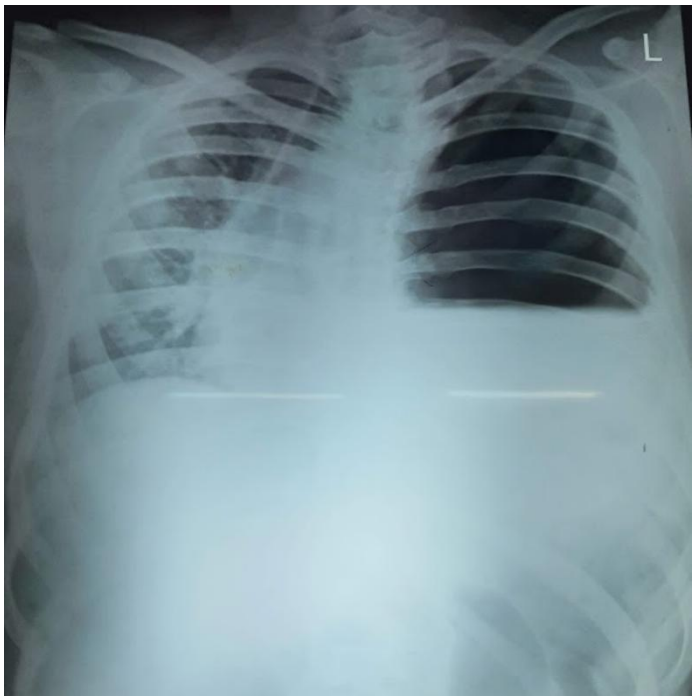

Figure 8: Fluid level in the left hemithorax with mediastinum shifted to right

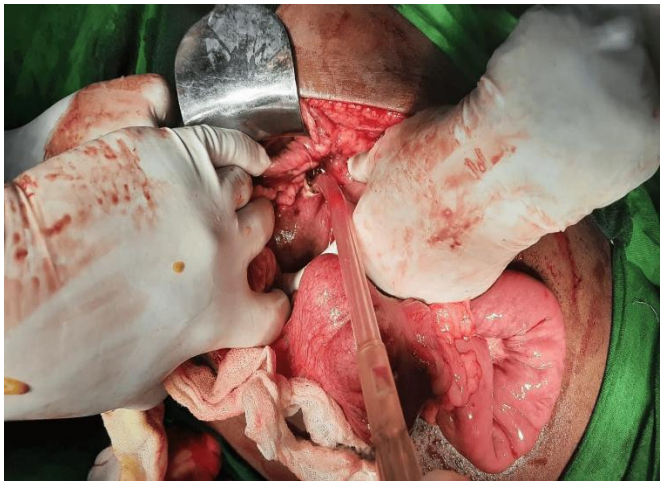

Figure 9: Defect in the Left dome of Diaphragm

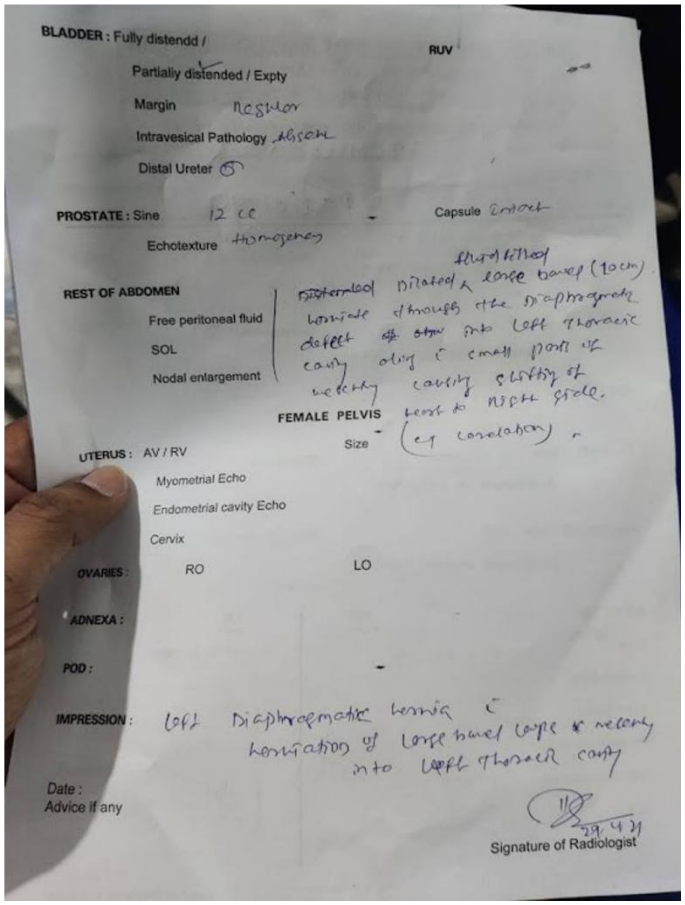

Figure 10: Patient's ultrasound Abd, Pelvis report

CONCLUSION:

Congenital diaphragmatic hernia though a rare entity in adolescents/adults, can be diagnosed in patients presenting with features of sub-acute intestinal obstruction (SAIO) with respiratory symptoms when dealt with high degree of suspicion. In a stable patient, investigations like HRCT thorax warrant confirmation of diagnosis of CDH while in an unstable patient, employing e-FAST in diagnosis of bowel loops in the thoracic cavity can be considered or a direct proceeding to exploratory laparotomy after x ray chest and abdomen if clinical condition of the patient warrants surgery. Some of the differential diagnosis that can be considered are left lower lobe pneumonia/empyema/ with diaphragmatic irritation/ parapneumonic effusion, subphrenic abscess/hollow viscus perforation/volvulus with diaphragmatic irritation/ reactive pleural effusion, tension pneumothorax with associated abdominal symptoms, acute gastric dilatation with diaphragmatic elevation, intrathoracic mass compressing lung and diaphragm

BIBLIOGRAPHY:

1. Bailey H, Love R. Bailey and Love's Short Practice of Surgery**.** 28th ed. London: CRC Press; 2018.
2. Townsend CM, Beauchamp RD, Evers BM, Mattox KL. Sabiston Textbook of Surgery: The Biological Basis of Modern

Surgical Practice. 21st ed. Philadelphia: Elsevier; 2021.

3. Longoni M, Pober BR, High FA. Congenital diaphragmatic hernia overview. GeneReviews. 2021.
4. 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. J Med Case Reports.