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A case of congenital diaphragmatic hernia presenting in the adult as gastric volvulus

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CASE REPORT

A case of congenital diaphragmatic hernia presenting in the adult as gastric volvulus

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Abstract

We report a case of an adult patient who was referred to the surgical emergency for the evaluation of acute abdominal pain and vomiting. Radiograph chest showed a left-sided cavity, which was misleading to lung pathology. A suspicion of gastric volvulus was kept in mind on seeing the stomach in the radiograph. Computed tomography confirmed the diagnosis of diaphragmatic hernia. The insertion of the Ryle's tube corrected the gastric volvulus. An immediate laparotomy was done for the closure of the diaphragmatic gap and reduction of the herniated contents. The patient responded well and was discharged in a week.

Keywords: Diaphragmatic hernia, Gastric volvulus, Laparotomy

1. Introduction

Congenital diaphragmatic hernia (CDH) is a developmental anomaly leading to a defect in the diaphragm and/or diaphragmatic eventration due to defective muscularization or thinning of its part [1]. The prevalence varies from 3 to 3.6/10 000 live births worldwide [2].

Being a congenital anomaly, the commonest presentation is in the neonatal period, where infants experience respiratory distress [3]. Presentation beyond infancy, as seen in 5–10% of patients, includes abdominal pain, vomiting, and pleural effusion, leading to respiratory distress [4].

Of the three types of CDH, namely Bochdalek hernia, Morgagni hernia/anterior hernias, and central hernia, Bochdalek hernia is the commonest type (80–85% cases) occurring commonly as a posterolateral diaphragmatic defect on the left side (85% cases). This type of CDH makes an individual prone to herniation of abdominal-organ systems such as liver, stomach, part of the intestine, and spleen, into the chest cavity [5,6].

Although Bochdalek hernia is the commonest type, its presentation in adults is a rare phenomenon, with only around 250 cases reported till date [7–12]. This is mainly because CDH remains asymptomatic beyond infancy or is misdiagnosed in adulthood due to the predominant symptoms being gastrointestinal distress.

When presented symptomatically in adults, it is an acute emergency requiring immediate surgery. Any delay in the diagnosis and management causes increased morbidity and mortality [7,13,14].

Besides, CDH association has been seen with secondary defects and complications like intestine malrotations, volvulus, cardiac anomalies, and pulmonary hypoplasia, making the diagnosis further a dilemma [3,6,15]. This warrants a knowledge of the different varied presentations of CDH in adults to allow for better patient management.

Here we report a rare case of left-sided CDH (Bochdalek hernia) in adult female, presenting as gastric volvulus (GV).

2. Case report

A 21-year-old lady presented to the hospital emergency department with complaints of pain in the epigastric region for 5 days. The patient also had a history of nonbilious vomiting. The patient had no other significant complaints or history of trauma or a significant family history.

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On examination, the patient was conscious-oriented and vitally stable. On per-abdomen examination, there was epigastric fullness with no defined lump palpable; tenderness was present in epigastrium, no rebound tenderness, or rigidity or guarding. No other positive finding was present. Intravenous fluids were started. Chest radiograph was done, which showed a marked elevation of the left side of the diaphragm, a big gastric shadow accompanied with an air-fluid level. There was a mediastinal shift to the right side, findings indicating acute GV (Fig. 1).

Using whole abdomen showed gross collection in the left pleural cavity with internal echoes suggestive of empyema.

Ryles tube and Foleys were inserted and the patient was evaluated. Pain in the epigastrium was severe and was relieved by Ryles tube insertion. It is probable that the GV got resolved after Ryles tube insertion (Fig. 2). There were nonbilious contents in the Ryles tube bag (gastric content).

Left-side chest was auscultated after pushing air in it and gurgling sound was heard. Based on this, a probable diagnosis of diaphragmatic hernia was suggested.

After stabilization, the patient was planned for contrast-enhanced computed tomography (CT) that showed left-sided diaphragmatic hernia with fundus and body as content, the stomach was thickened and showed ischemic changes (Fig. 3). There were collections in the left pleural cavity.

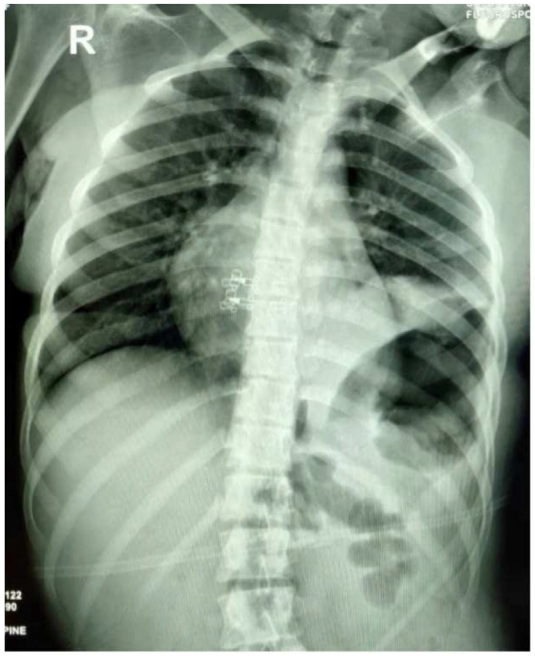

Fig. 1. Chest radiograph suggestive of gastric volvulus.

Fig. 2. Post Ryles tube insertion (resolved volvulus).

The patient was planned for exploratory laparotomy after a written informed consent. Left subcostal incision was made and exploration was done. Intraoperatively, a 3 × 3-cm defect in the posterolateral surface of diaphragm was identified with herniation of fundus and body in the pleural cavity (Fig. 4). There were no signs of perforation. For management, hernial contents were reduced, chest tube was inserted under vision, diaphragmatic defect was closed in double layer by polydioxanone suture, and a drain was placed. The patient had an uneventful recovery and was discharged on postoperative day 6

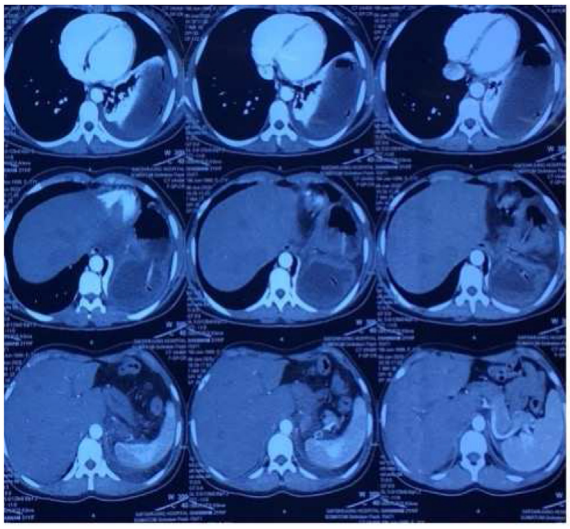

Fig. 3. CECT abdomen. CECT, contrast-enhanced computed tomograph.

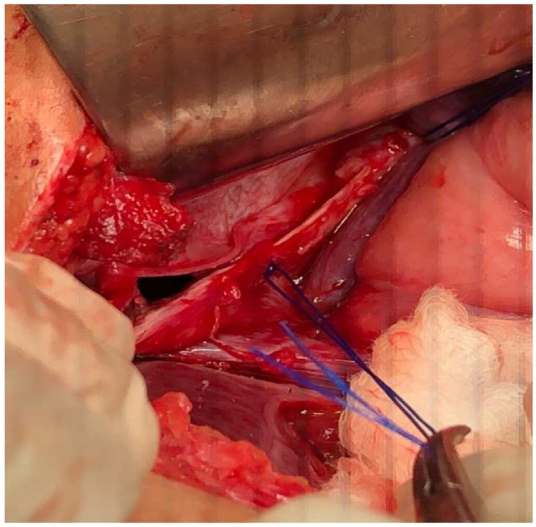

Fig. 4. Intraoperative images.

after drain and chest-tube removal. A postoperative radiograph was done before the discharge to confirm the normal abdominal findings (Fig. 5).

3. Discussion

The rarity of the case lies in the late presentation of CDH in adulthood. The age presentation may vary from more than 1 year to elderly [5,9,10,12,16–18]. On many occasions, it remains asymptomatic, albeit some cases may show symptoms for the first time in late adulthood or elderly either as gastrointestinal or respiratory distress. Such cases are bound to have a diagnostic dilemma, especially if accompanied by other associated conditions [10].

Fig. 5. Postoperative radiograph.

Such cases are significant as these symptoms may be intermittent, whereby the reduction in the herniated viscera descends by itself, causing alleviation of symptoms without any radiological telltale sign [10]. While other cases may be severe enough to demand immediate laparotomy as any delay may lead to sudden death [14,19].

The causes of delayed age presentation have been attributed to the late rupture of the hernial sac, removal of abdominal-organ plugs that covered the diaphragmatic gap since childhood, sudden exertion, leading to a rise in intra-abdominal pressure, and trauma [12]. In Al-Naami [12], a 34-year-old male presented with GV similar to the present study, after an inciting trauma through a diaphragmatic hernia. Although the trauma causing a diaphragmatic hernia with GV is rare, but such cases have been reported in the literature [12]. Unlike that case, there was no history of trauma in the present case.

The symptoms more or less deal with the abdominal and respiratory complaints since the herniation of the abdominal organs compresses the respiratory system. GV is a rare accompanying complication of CDH [20] where the stomach rotates by more than 180°. It is of two types: primary GV (25–30% cases), which is characterized by 'the absence or laxity of the gastrocolic or gastrosplenic ligaments,' and secondary GV (70–75% cases), which is mostly associated with an underlying condition such as CDH, connective-tissue disorders, anterior abdominal-wall defects, and adhesions [21–23].

Similar to CDH, its clinical presentation also varies from nonspecific symptoms to severe symptoms (46% cases), with mortality as high as 32% due to visceral strangulation, ischemia, and necrosis with perforation, leading to shock [24]. Acute GV usually presents with chest pain or abdominal pain, vomiting, and epigastric distension, while chronic GV presents with wider symptomatology like nonbilious vomiting, epigastric pain, abdominal distension, retching, early satiety, and gastroesophageal reflux.

In our case, the patient presented with symptoms of acute abdomen with radiograph suggestive of GV, which resolved after Ryles tube insertion, which is quite unusual. Among the plethora of diagnostic modalities like plain chest/abdominal radiographs, ultrasound, CT scan, barium meal, fluoroscopy, and MRI, we used radiograph and CT for the diagnosis.

CT scan can detect small asymptomatic CDH and provides the highest accuracy for a correct diagnosis [20,25]. It gives an accurate assessment of the anatomical relationships of herniated and the

resident organs and focal defects in the diaphragm as in our case, thereby making it the gold-standard imaging modality in an emergency situation.

However, all centers may not be equipped with contrast-enhanced CT, and thus in such cases, the diagnosis relies on a chest radiograph during an acute attack to observe the herniated viscera through the diaphragmatic hernia [10]. However, considering a low sensitivity of radiograph, BH needs to be differentiated from other mimickers like airspace consolidation, left−middle-lobe collapse, sequestration of the lung, pericardial fat pad, mediastinal mass such as lipoma, and tension pneumothorax on the chest radiograph, which can complicate the treatment. Another close differential is the diaphragmatic eventration, which is also a congenital maldevelopment of the diaphragm, whereby the unbroken continuity in the diaphragm differentiates it from CDH. In such cases, barium meal and fluoroscopy are useful adjuncts for clinching the diagnosis [26].

An early diagnosis is critical for prompt treatment. The optimal treatment plan for patients with GV has not yet been established, nor is there a consensus on the absolute indications for surgery and timing. Since the onset of complications is associated with high mortality and morbidity rates, therefore, it makes emergency surgery mandatory [27,28].

A definitive treatment includes laparotomy or thoracotomy followed by gastric decompression, reduction of the volvulus, repair of the predisposing structural defects, and fixation of the stomach to prevent a recurrence. Nonviable or gangrenous areas may demand subtotal or total gastrectomy [22,23]. There has been an introduction of the biologic meshes showing effectivity in closing the defects in the diaphragm, inducing less inflammatory response, and thereby decreasing the formation of the adhesions. Overall, the rate of recurrence is low with good long-term outcomes [3,8,13].

4. Conclusion

CDH is a rare surgical emergency presenting in adults. Its association with GV is further rare, causing the diagnostic dilemma. The imaging modalities like radiograph and CT scan must be done at the earliest for efficient management of such cases. The treatment demands immediate laparotomy with the closure of the diaphragmatic gap and reduction of the herniated contents.

Conflicts of interest

There are no conflicts of interest.

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