

Diaphragmatic Hernia Presenting as Gastrointestinal Bleeding

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We report a 5-year-old girl who presented with persistent iron-deficiency anemia. She had a history of abdominal pain and recurrent gastrointestinal bleeding. High-resolution computed tomography, esophagogastroduodenoscopy and barium meal examination revealed a congenital diaphragmatic hernia with intermittent gastric volvulus. The anemia was the result of Cameron lesions associated with diaphragmatic hernia.

Key words: Anemia, Diaphragmatic hernia, Gastric volvulus, Iron Deficiency.

Diaphragmatic hernia with intermittent gastric volvulus is an uncommon condition in children. Potential complications such as gastrointestinal bleeding (acute, chronic and obscure) and anemia make the condition clinically relevant(1). There are many studies describing adult patients with diaphragmatic hernia presenting with anemia(2-4). However, diaphragmatic hernia with intermittent gastric volvulus and gastrointestinal bleeding resulting in persistent iron-deficiency anemia has never been described in a child. We report a 5-year-old girl who presented with this condition and was managed successfully.

CASE REPORT

A 5-year-old female child presented for persistent anemia not responding to adequate hematinics and blood transfusion. There was history of abdominal pain and malena, off and on for the last 7 months. There was no history of fever, vomiting, abdominal distension, constipation, history of trauma to the abdomen, jaundice, or bleeding from any other site. The diet of the child was adequate in iron-rich foods.

On admission, child was afebrile and hemo-

dynamically stable. Severe pallor was present. The weight was 10 kg and height was 82 cm, both below the 5th percentile for age. There was no icterus, clubbing or petechiae. Abdominal examination revealed a soft, non-tender liver with a smooth surface and a span of 7 cm. The spleen was not palpable. Other systems were normal. Investigations revealed a hemoglobin of 4.8 g/dL, total leukocyte count of 13,800/cumm and platelet count of 6.8 lac/cumm. Hematological indices and peripheral smear were suggestive of iron-deficiency anemia. Corrected reticulocyte count was 1.05%. Liver function, renal function tests and serum lactate dehydrogenase were normal. Stool analysis was normal at this admission. Chest X-ray showed a homogenous opacity in the right lower zone not silhouetting the cardiac borders (**Fig. 1**). The patient underwent esophagogastroduodenoscopy (EGD) which showed multiple linear gastric erosions on the mucosal folds on the lesser curve of the stomach. No active bleeding was seen hence no endoscopic therapy was instituted. A nasogastric tube passed into the stomach without any difficulty.

Barium meal showed a mesentrico-axial type of gastric volvulus with the fundus in the right hemithorax probably through a diaphragmatic

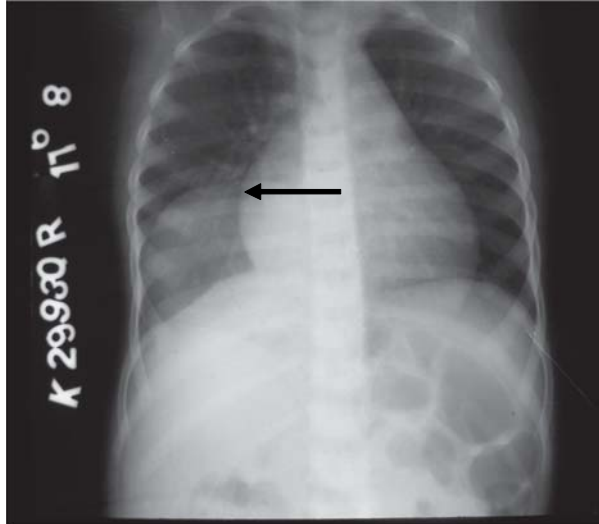


FIG. 1 Homogenous opacity noted in right lower zone not silhouetting with cardiac border.

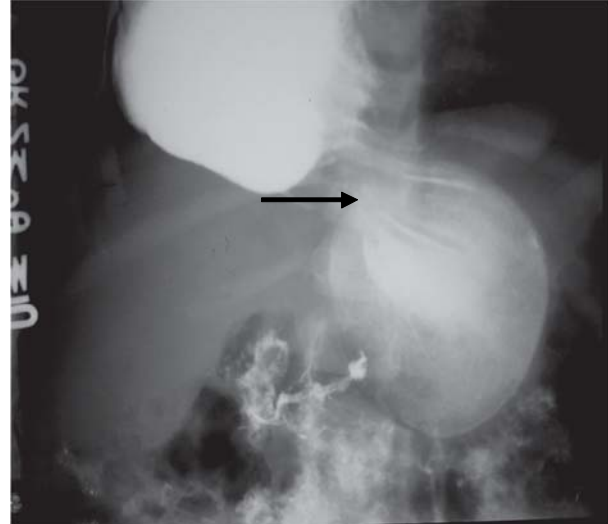


FIG. 2 Barium meal showing mesenterico-axial type of volvulus with gastric fundus in the right hemithorax and pylorus in left hypochondriac region.

defect and pylorus in left hypochondriac region (**Fig. 2**). During the test, the gastric volvulus reduced spontaneously and hence intermittent gastric volvulus with diaphragmatic hernia was suspected. High-resolution computed tomography of the chest showed mesenterico-axial volvulus of the stomach with a diaphragmatic defect (type 2) with fundus and body of stomach lying within the right hemithorax. The patient was transfused with packed red cells. Right thoracoscopy was done and a 5 cm × 7cm defect in the right dome of diaphragm was closed. The stomach got reduced spontaneously because of pressure created for thoracoscopy procedure.

Post operative recovery was uneventful. The patient was discharged on oral hematinics and is well on follow up.

DISCUSSION

Diaphragmatic hernia with gastric volvulus in children is a rare subtype with only few cases reported in literature. A review of the literature revealed one such study in which the authors described three children, all of whom had an acute presentation and had to be operated on an emergency basis(5). Late presentation of diaphragmatic hernia as anemia has been described in adults(2). The cause of anemia has been attributed to Cameron lesions which are linear gastric ulcers or erosions on the mucosal folds at the

diaphragmatic impression in patients with a large hiatal hernia(6,7). These gastric erosions can cause iron deficiency anemia from chronic blood loss.

Gastric volvulus may be idiopathic or secondary to various congenital or acquired conditions. Among the associated problems, diaphragmatic defects predominate(8). The presentation can be acute, chronic, acute-on-chronic or intermittent in type. The clinical symptoms depend on the degree of rotation and obstruction. Severe epigastric pain and distension, violent unproductive retching and inability to pass a nasogastric tube comprise the classical triad of Borchardt(5). Intermittent type of gastric volvulus may cause diverse gastrointestinal symptoms in children. In our patient, the chest X-ray done in a private hospital was normal, the nasogastric tube could be passed into the stomach easily and stool analysis on admission was normal. This may be because of spontaneous reduction of the gastric volvulus. Thus intermittent gastric volvulus causes symptoms intermittently. Routine investigations done in the asymptomatic period may not reveal any abnormality and hence diagnosis may be missed.

Treatment of Cameron lesions is primarily medical and surgery is reserved for refractory cases and a few complicated cases. Surgical treatment (fundoplication, laparoscopic or open) is

recommended in patients with medically refractory disease, uncontrolled bleeding from the lesions and in patients in whom the hernia is complicated with volvulus, incarceration and perforation(1). With growing use of laparoscopic surgery, patients benefit from a minimally invasive approach and several authors have reported favourable outcomes after performing laparoscopic diaphragmatic hernia repairs and gastropexy(9,10).

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REFERENCES

1. Maganty K, Smith RL. Cameron lesions: Unusual cause of gastrointestinal bleeding and anemia. *Digestion* 2008; 77: 214-217.
2. Pauwelyn KA, Verhamme M. Large hiatal hernia and iron deficiency anaemia: clinico-endoscopical findings. *Acta Clin Belg* 2005; 60: 166-172.
3. Panzuto F, Di Giulio E, Capurso G, Baccini F, D'Ambra G, Delle Fave G, *et al.* Large hiatal hernia in patients with iron deficiency anaemia: a prospective study on prevalence and treatment. *Aliment Pharmacol Ther* 2004; 19: 663-670.
4. Fireman Z, Zachlka R, Abu Mouch S, Kopelman Y. The role of endoscopy in the evaluation of iron deficiency anemia in premenopausal women. *Isr Med Assoc J* 2006; 8: 88-90.
5. Karande TP, Oak SN, Karmarkar SJ, Kulkarni BK, Deshmukh SS. Gastric volvulus in childhood. *J Postgrad Med* 1997; 43: 46-47.
6. Cameron AJ, Higgins JA. Linear gastric erosion. A lesion associated with large diaphragmatic hernia and chronic blood loss anemia. *Gastroenterology* 1986; 91: 338-342.
7. Moskovitz M, Fadden R, Min T, Jansma D, Gavalier J. Large hiatal hernias, anemia, and linear gastric erosion: studies of etiology and medical therapy. *Am J Gastroenterol* 1992; 87: 622-626.
8. Singal AK, Vignesh KG, Mathai J. Acute gastric volvulus secondary to eventration of the diaphragm in a child. *J Indian Assoc Pediatr Surg* 2006; 11: 44-46.
9. Naim HJ, Smith R, Gorecki PJ. Emergent laparoscopic reduction of acute gastric volvulus with anterior gastropexy. *Surg Laparosc Endosc Percutan Tech* 2003; 13: 389-391
10. Casaccia M, Torelli P, Troilo BM, Savelli A, Valente U. Composite mesh repair of a large paraoesophageal hiatus hernia. *J Laparoendosc Adv Surg Tech A* 2006; 16: 381-385.