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ESOPHAGEAL PERFORATION DUE TO PARAESOPHAGEAL HIATAL HERNIA IN A BOY

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We report herein the case of a four-year-old boy with paraesophageal hiatal hernia who presented with shock. A laparotomy revealed that the stomach had prolapsed totally through the paraesophageal hiatal defect into the right chest, and had become volvulized and strangulated. The stomach had been dilated enormously by undigested sunflower seeds, resulting in ischemia and perforation of the gastro-esophageal junction. Subtotal gastric resection and transthoracic esophago-gastric anastomosis were performed. In this report, the pathogenesis of esophageal perforation and the surgical approach are discussed.

Key Words: Paraesophageal Hiatal Hernia, Thoracotomy, Esophageal Perforation, Gastric Ischemia.

ÇOCUKTA PARAÖZOFAGIAL HIATAL HERNIYE BAĞLI ÖZOFAGUS PERFORASYONU

Bu yazıda, şok bulguları ile başvuran paraözofagial hiatal hernili dört yaşında bir olgu sunulmaktadır. Yapılan laparotomide midenin, paraözofagial hiatal defektten sağ göğüs boşluğuna geçtiği, volvulus ve strangulasyon meydana geldiği görüldü. Sindirilmemiş ayçiçeği çekirdekleri ile ileri derecede dilate olan midede iskemi ve gastroözofagial bileşkede perforasyon oluştuğu saptandı. Subtotal mide rezeksiyonu ve transtorakal yol ile özofagogastric anastomoz uygulandı. Bu sunumda özofagus perforasyonunun patogenezi ve cerrahi yaklaşım tartışıldı.

Anahtar Kelimeler: Paraözofagial Hiatal Herni, Torakotomi, Özofagial Perforasyon, Mide İskemisi.

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Paraesophageal hiatal hernia (PHH) is a rare condition in infancy. The term has been expanded to include large esophageal hiatal hernias in which most of the stomach is in the thorax (1). We report a case of strangulated PHH presenting with severe shock.

CASE REPORT

A 4-year-old boy presented with an 8-hour history of chest pain and retching. At the time of presentation the child was very toxic with severe respiratory distress, and markedly decreased breath sounds on the right side of the chest. A physical examination revealed marked dehydration, tachypnea, tachycardia, mildly abdominal distention and tenderness. Laboratory tests indicated a hemoglobin level of 14.8 g/dl, a hematocrit level of 43.2%, and a white blood cell count of 12100/mm3. The radiological workup included plain abdominal and chest X-ray showing radiodensity in the right lower hemithorax, and free air (Fig. 1). Ultrasonography revealed a right diaphragmatic hernia.

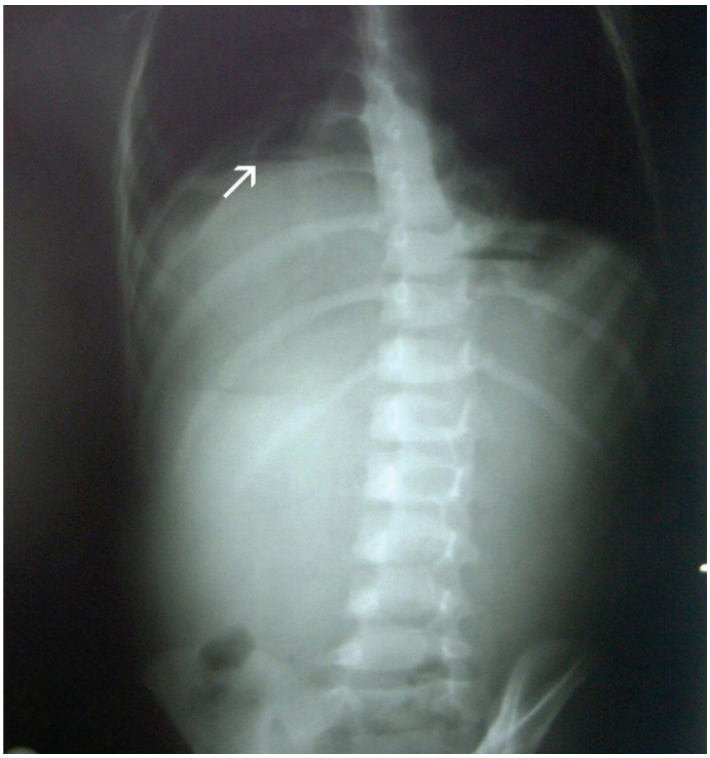

Fig. 1 Anteroposterior of abdominal radiograph shows an unusual radiodensity and free air (arrow).

After adequate resuscitation with intravenous fluids and antibiotics, the patient underwent surgical repair via laparotomy. At exploration, the stomach was prolapsed into the right hemithorax through a paraesophageal hiatal defect. The strangulated stomach was reduced into the abdomen with difficulty. It was gangrenous and enormously dilated. Ligaments of the stomach were absent. The gastro-esophageal junction was situated in the normal position, and a perforation about 20 mm in length starting from the lower esophageal segment to the cardia was observed. The stomach was full of sunflower seeds. The gangrenous area was resected, and the remaining stomach was tapered for an adequate anastomosis to the esophagus. The esophago-gastric anastomosis was performed via right thoracotomy, and the hiatal defect was repaired intra-abdominally. The chest was closed in layers after inserting a chest tube. An intraperitoneal drain was left. The patient suffered respiratory failure postoperatively, necessitating respiratory support for 24 hours. Postoperatively, the patient's condition improved gradually. After an examination of the esophageal passage by an upper gastrointestinal contrast study, oral food was started on postoperative day 10. At the 3-month follow-up he was asymptomatic.

DISCUSSION

Esophageal hiatal hernia is classified into two types: sliding hiatal hernia and PHH, which comprises only 2-5% of all hiatal hernias (1,2). PHH in childhood is a rare condition and is characterized by potential morbidity causing life-threatening complications resulting from mechanical obstruction or vascular compromise of the stomach due to intrathoracic gastric volvulus (3-5). In the present case, we found esophago-gastric ischemia and gastric necrosis due to an intrathoracic gastric volvulus secondary to PHH. It is speculated that two possible etiologic factors led to acute strangulation and perforation in this patient. One of them is the kind of gastric content, consisting of undigested sunflower seeds, and we thought that this hard content prevented the stomach from reducing from the chest into the abdomen. Because the stomach distends with gastric content, ischemia of the stomach frequently occurs (6). As a second reason, it was thought that vascular occlusion developed in the left gastric artery owing to gastric volvulus. Additionally, the absence of gastric ligaments also contributed to ischemia of the stomach. Although the gastric dilatation and vascular occlusion may be important in the pathogenesis of gastric ischemia in our case, esophageal perforation has not been explained.

Since many patients with PHH are known to present as emergencies with gastric strangulation and volvulus, if left untreated, and elective repair is advocated (2). On the other hand, effective treatment for PHH associated with acute gastric volvulus requires immediate surgical intervention (1-4,7). Because the plane abdominal radiographs revealed free air and the vital symptoms indicated an acute mediastinitis, this patient underwent an emergency operation after appropriate fluid and electrolyte replacement.

To ensure identification of all associated defects and facilitate reduction of the dilated stomach, an abdominal approach is recommended more than a thoracic approach (2-8). Additionally, the transabdominal route allows a more distinct preparation of diaphragmatic cruras, and a proper closure of the hiatal defect as well as proper gastropexy (1). In the present case, the surgical approach was performed both transabdominally and transthoracally. Major gastric resections are usually not necessary in children (4); however, resection of the gangrenous area was accomplished without compromising our patient's status.

To our knowledge, this is the first case report of esophageal perforation in a child with PHH. This case report emphasizes the serious complication of PHH, and the importance of prompt surgical intervention when strangulation occurs. Exploration should be performed transabdominally to aid in the reduction of the stomach and location of associated defects. If gastro-esophageal anastomosis is not possible, transthoracal anastomosis should be performed.

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