Intrathoracic Gastric Perforation in a Child

Bir Çocukta Toraks İçinde Mide Perforasyonu

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SUMMARY

Introduction: Paraesophageal hernia (PEH) is a rare condition in children. The symptomatology of these patients is usually non-specific in the form of repeated attacks of respiratory infection and/or recurrent attacks of vomiting but can also lead to serious complications such as intrathoracic gastric strangulation and perforation.

Case Report: A 6-year old girl was referred from a regional hospital for haematemesis and abdominal pain. She had fever and sepsis. Physical examination revealed abdominal tenderness, rebound and failure to thrive. Air-fluid level was seen in the posterior of left hemithorax at the AP and lateral chest radiographs. Thorax CT demonstrated pleural fluid, opacity, volume loss and left lung being pushed to the right of heart. Stomach and splenic flexura were moved to the left hemithorax. At laparatomy, stomach and splenic flexura had passed along the esophageal hiatus toward the chest and fundus of the stomach was perforated within the hernia sac. Greater curvature and fundus of the stomach were necrotic and hernia sac and intraabdominal space was filled with food. Stomach was pulled into the abdomen. Hernia sac was excised and defect was primarly repaired. Necrotic areas of the stomach were debrided. Then, perforation of stomach was repaired and gastrostomy was performed. Control esophagogastroduodenography revealed a 2 cm filling defect at the greater curvature and fundus of stomach due to previous gastric resection. Antireflux medical treatment was successful.

Conclusion: PEH may be asymptomatic and encountered incidentally. It has the potential for serious complications such as strangulation and perforation which may present with unusual symptoms and physical findings reflecting the original pathology. Due to the risk of these serious complications, elective surgical repair is necessary after diagnosis. *(Journal of Current Pediatrics 2012; 10: 36-9)*

Key words: Hiatus hernia, paraesophageal hernia, gastric perforation

ÖZET

Giriş: Paraösefageal herni (PÖH), çocuklarda nadir bir durumdur. Bu hastaların belirtileri tekrarlayan göğüs enfeksiyonları ve/veya tekrarlayan kusma ataklarıdır ancak intratorasik gastrik volvulus ve perforasyon gibi ciddi komplikasyonlarla birlikte olabilir.

Olgu Sunumu: Altı yaşında kız hasta karın ağrısı ve hematemezden dolayı sevk edilmişti. Ateş ve septik bulguları vardı. Fizik muayenede gelişme geriliği, karında hassasiyet ve rebaund saptandı. Ön arka ve yan akciğer grafisinde sol hemitoraks posteriorunda hava-sıvı seviyesi görüldü. Toraks BT, sol hemitoraksta plevral sıvı, opasite, sol akciğerde hacim kaybı ve kalbin sağa itilmiş olduğunu, mide ve splenik fleksuranın sol hemitoraks içine hareket ettiğini gösterdi. Laparatomide, mide ve splenik fleksuranın ösefagus sol yanından toraks içine girdiği, herni kesesi içinde mide fundusunun perfore olduğu görüldü. Midenin fundus ve büyük kurvaturu nekroze olmuştu kese ve karın içi gıda ile doluydu. Mide karın içine alındı ve herni kesesi eksize edilerek defekt onarıldı. Mide perforasyonunun çevresindeki nekrotik kısımlar çıkarıldı ve perforasyon onarıldı. Ayrıca gastrostomi oluşturuldu. Herhangi bir rotasyon olmadığından dolayı gastropeksi uygulanmadı. Kontrol ÖMD'de mide fundus ve büyük kurvaturunda mide rezeksiyonuna bağlı 2 cm'lik dolma defekti görüldü. Antireflü ilaç tedavisi başarılı oldu.

Tartışma: PÖH belirti vermeyebilir ve tesadüfen karşılaşılabilir. Strangulasyon ve perforasyon gibi olası ciddi komplikasyonları vardır ve orijinal patolojiyi yansıtan farklı belirtiler ve fizik bulgularla karşımıza çıkabilir Bu komplikasyonların riski nedeniyle tanıdan sonra elektif cerrahi onarım gereklidir. *(Güncel Pediatri 2012; 10: 36-9)*

Anahtar kelimeler: Hiatus hernisi, paraösefageal herni, intratorasik mide perforasyonu

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Introduction

Paraesophageal hernia can be seen at any age and is a rare condition in childhood (1,2). It may be congenital or acquired. In type I hiatal hernia herniated gastroesophageal junction and cardia are shifted to the mediastinum. It is seen in 95% of cases, and known as "sliding". In type II hiatal hernia, gastroesophageal junction and cardia are at their normal position. It is seen in 2-5% of cases and called as "rolling" or paraesophageal hernia (3,4). Usually fundus and larger curvature of stomach, rarely whole stomach pass into the mediastinal sac in the mediastinum. The disease may have an asymptomatic course or may have symptoms such as recurrent chest infections and/or recurrent episodes of vomiting, haematemesis and growth retardation (5). Occasionally, intrathoracic gastric volvulus may result with fatal complications such as incarceration and perforation. Due to these serious complications, elective surgical repair should be done whenever the diagnosis is made even the patient is asymptomatic (1,2,6).

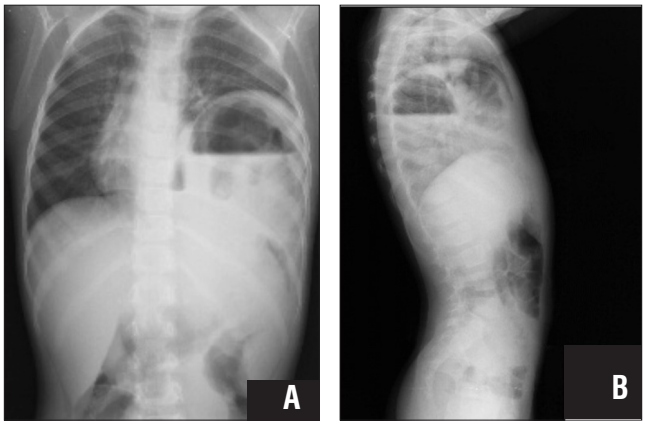

Figure 1A-1B. Antero-posterior and lateral plain chest graphy showing air-fluid level in the left and posterior side

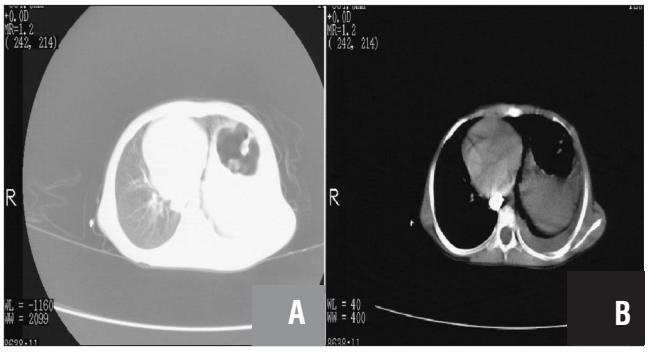

Figure 2A-2B. Thorax CT demonstrated pleural fluid, opacity, volume loss and left lung being pushed to the right of heart. Stomach and splenic flexura were moved to the left hemithorax

Case Report

A 6-year old girl was referred from a regional hospital for haematemesis and abdominal pain. She had fever, septicemia and anemia. Physical examination revealed abdominal tenderness, rebound and failure to thrive. Air-fluid level was seen at the posterior site of left hemithorax on the AP and lateral chest radiographs. There was no free air under the diaphram (Figure 1A, 1B). Thorax CT demonstrated pleural fluid and opacity at the left hemithorax, volume loss of left lung and heart being pushed to the right hemithorax. Stomach and splenic flexura were moved to the left hemithorax (Figure 2A, 2B). At laparatomy, fundus and greater curvature of the stomach had passed along the esophageal hiatus to the left hemithorax and fundus of the stomach was perforated within the hernia sac. This perforation was probably due to strangulation of stomach in the thorax. Greater curvature and fundus of the stomach were necrotic and hernia sac and intraabdominal space were filled with food particles. Necrotic areas of the stomach were debrided (Figure 3A).

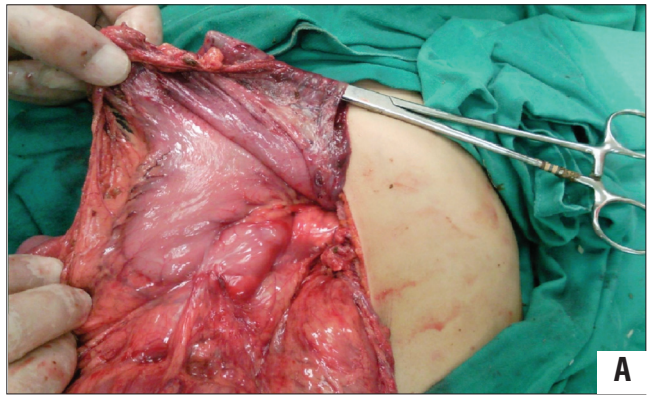

Figure 3A. Necrosis and tearing from fundus towards greater curvature of the stomach

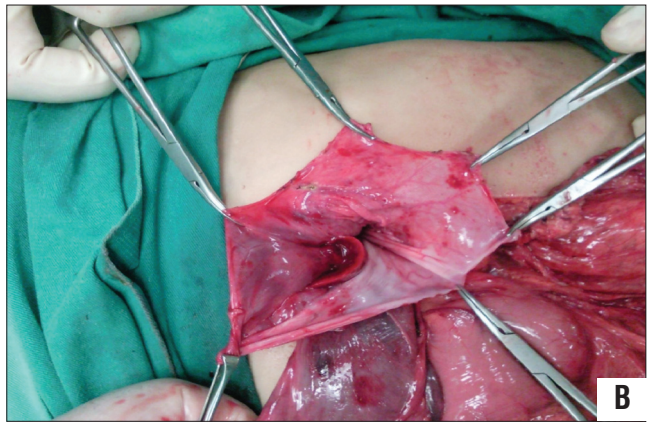

Figure 3B. Hernia sac was excised and hernia was repaired

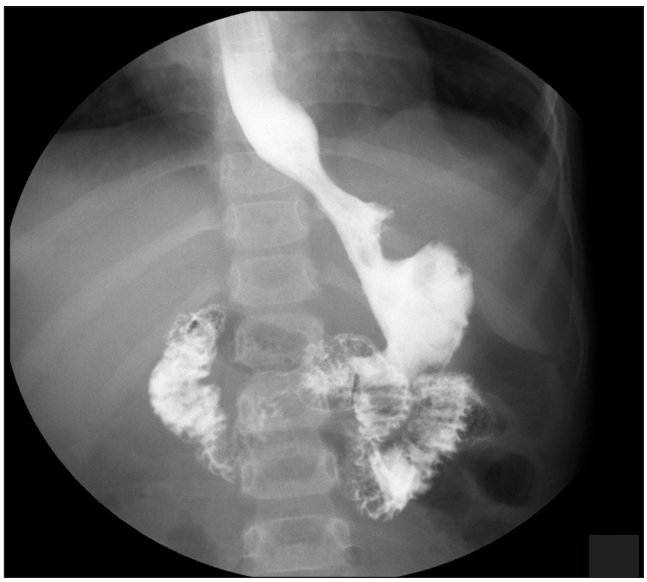

Figure 4. At the Esophagogastroduodenography, herniation was not observed but stomach filling defect and minimal GER were demonstrated in the fifth postoperative week

Stomach was repaired and gastrostomy was performed. Hernia sac was excised and then hiatal hernia was repaired (Figure 3B). Circulation of the stomach was not good. Therefore, anti-reflux procedure and gastropexy due to absence of gastric rotation was not performed. Control esophagogastroduodenography revealed a 2-cm filling defect at the greater curvature and fundus of stomach due to previous gastric resection and also minimal gastroesophageal reflux (Figure 4). Anti-reflux medical treatment with ranitidine (4 mg/kg/day) and domperidon (0.5 mg/kg/day) was started. The medical treatment was successful. Follow up is still continuing without problem.

Discussion

Paraesophageal hernias can be seen at any age but is a rare condition in childhood (1,2). Hiatal hernias are of four types. Type I, also called "sliding" type, is seen in 95% of cases where gastroesophageal junction and cardia are shifted to the mediastinum. In type II, gastroesophageal junction and cardia are at their normal position. Hernias of this type are seen in 2-5% of cases and are called as "rolling" type or paraesophageal hernias (3,4,7). Herniation of the stomach along with gastroesophageal junction into the mediastinum is known as type III hiatal hernia. Type IV hiatal hernias are diagnosed by an intrathoracic stomach associated with viscera, such as the spleen, colon, small bowel, or pancreas (7). Among the operated hiatus hernia cases, incidence of PEH is 3.5 to 5% (3). The disease may have an asymptomatic course but usually it presents with recurrent chest infections and/or recurrent episodes of vomiting, iron deficiency anemia, haematemesis, and growth retardation (5).

Congenital or acquired (either traumatic or iatrogenic) factors may play a role in the etiology of PEH (8). Usually the fundus or large curvature of the stomach, rarely whole stomach pass into the mediastinal sac (5). Hiatus hernias can be diagnosed with simply anteroposterior and lateral chest plain radiographies. Herniated content can be seen as a cystic mass or an air-fluid level as in 32% (5). Differential diagnosis of solid and cystic masses should include large sliding type hiatal hernias, lung abscess, congenital lung cysts, hydatid cyst, pericardial cyst, anterior intestinal duplication cysts, epiphrenic diverticulum and perforation content. Upper gastrointestinal X-ray with contrast is an exclusive method to confirm the diagnosis (5). CT is helpful in demonstrating the volume of the enlarged hiatus a long with position of hernia and helps to validate the fluid filled structure in the posterior mediastinum (5,9). In the study of Karpelowsky et al, among the 59 cases, the hernia sac was located at the posterior mediastinum, to the left or right of midline in 47% of cases, to the right in 51.4% and to the left only in 1.5% of patients (5). In our case, the sac was found in the left mediastinum shifting the heart to the right. In contrast to the adult literature about PEH, there are limited number of publications emphasizing the etiology, symptoms and management of PEH in the pediatric literature. The basis of the debate is whether the etiology is congenital or acquired and whether to add antireflux procedure or not during surgical repair (5). Mortality and morbidity of PEH in children are not similar to those in adults. Although incarceration and organo-axial volvulus are commonly seen and demonstrated radiologically in children, strangulation or severe obstruction are not seen as often as in adults (5,10,11). PEH may rarely can lead to serious and mortal complications such as intrathoracic gastric volvulus, strangulation and perforation (1,2,6). Since type II and type IV hiatal hernias do not have much symptoms, or since their signs are nonspesific, they can not be diagnosed early (7). In the series of 59 cases of Karpelowsky et al., all paraesophageal hernias had been incarserated but none of them had strangulation. The chronic blood loss due to incarserated stomach or reflux esophagitis resulted in iron deficiency anemia (5). Our case presented with intrathoracic strangulation and perforation which was mentioned in the literature to be rare in children. Her general condition deteriorated and she was operated urgently. Paraesophageal hernias, although detected before any complications, should be managed with elective surgical repair in children due to the complication risk

(1,2,5,6). Our case was not diagnosed previously and she admitted with a rare serious complication as perforation of the intrathoracic stomach. She was operated following the anteroposterior and lateral chest radiographs and CT. Since perforation was suspected, we did not take upper gastrointestinal graphies with contrast substance. At the surgical repair, the hernia contents are pulled into the abdomen, sac is excised and afterwards crura of diaphram are sutured. Due to the high incidence of gastroesophageal reflux in PEH cases, antireflux surgery should also be performed (3,5,6,10). In our case, intrathoracic gastric perforation was present. The necrotic edges of fundus and greater curvature of stomach were excised and we preferred not to do any further anti-reflux procedure to the residual, poorly circulating gastric tissue. At the esophagogastroduodenography taken on the 5th postoperative week, herniation was not observed but there was a stomach filling-defect due to previous resection of necrotic part of the stomach and repair of the defect. We also detected minimal GER. Antireflux medical treatment with begun ranitidine (4mg/kg/day) and domperidon (0.5 mg/kg/day) was started. The medical treatment was successful. There was no complication at follow-up of patient.

In conclusion, PEH may be asymptomatic and encountered incidentally. It has the potential for serious and fatal complications such as strangulation and perforation which may present with unusual symptoms and physical findings reflecting the original pathology. In order not to face these serious complications, elective surgical repair is necessary after diagnosis. Rarely, as in our case, the patient may present with a severe clinical picture due to intrathoracic strangulation and perforation. Therefore, PEH should be considered in children with developmental delay, recurrent lung infections, vomiting and anemia to enable early diagnosis and avoid complications.

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