Case Report

DOI: http://dx.doi.org/10.18203/2349-2902.isj20183743

A rare case of spontaneous gastric perforation in an adolescent

Vasuki R., Arun P. S., Rajesh Menon Moothedath*

Department of General Surgery, Government Kilpauk Medical College, Chennai, Tamil Nadu, India

Received: 29 June 2018 Accepted: 26 July 2018

*Correspondence:

Dr. Rajesh Menon Moothedath, E-mail: consultmrmenon@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Incidence of Peptic ulcer perforation in children and adolescents are very rare. Perforated gastric ulcer is extremely rare with only handful of cases reported worldwide in the same age group. Pneumoperitoneum and peritonitis due to gastric perforation is a very rare presentation in children and adolescents and it can often be overlooked with disastrous consequences. Even though in young patients, peptic ulcerations can happen in association with *H. pylori* infection, secondary to medications like non-steroidal anti-inflammatory agents, corticosteroids, rarely due to Zollinger Ellison syndrome, related to stress, post burns or head trauma it is seldom common. Among perforations gastric perforation is very rare. Here we discuss a case of 15-year-old school student who presented with acute abdominal pain and features of peritonitis which we initially thought probably due to perforated appendix but turned out to be a gastric perforation. Plain radiograph of the abdomen showed pneumoperitoneum. When an emergency midline laparotomy was performed, we found a perforation in gastric antrum anteriorly with peritonitis which was treated by thorough decontamination and Graham's live omental patch closure. *H. Pylori* tests were negative. At a time when acute presentation of peptic ulcerations or perforation as its complication is decreasing in incidence worldwide, this case has come as an eye opener. Thus, perforated gastric/duodenal ulcer in pediatric and young adult patient should not be overlooked in a young patient presenting with acute abdomen. Many times, there is no clear etiology and then it is spontaneous perforation. Emergency surgical management is the preferred mode of treatment.

Keywords: Acute abdomen, Gastric perforation, *H. Pylori*, Omental patch, Peritonitis, Pneumoperitoneum, Polymerase Chain reactions (PCR)

INTRODUCTION

Potential causes for pneumoperitoneum in children and adolescents are relatively few. Often, we consider a perforated appendicitis as a source of free air in the peritoneum and seldom we think of a perforated duodenal and gastric ulcer as a cause. In modern medicine and with the advent of potent medications for peptic ulcerations, acute presentation of the same or its life-threatening complications like bleeding or perforation are seldom seen.¹⁻³ The diagnosis can be overlooked due to vague and variable symptoms and low index of suspicion due to

its rarity in this age group.⁴ However undiagnosed or inappropriately managed perforations may carry high morbidity and mortality.

Even though in young patients peptic ulcerations can happen in association with H Pylori infection, secondary to medications like non-steroidal anti-inflammatory agents, corticosteroids, rarely due to Zollinger Ellison syndrome, related to stress, post burns or head trauma it is not seem commonly. 5-7.9 Many times the etiology is not clear. 2.3,7,8 Identification and timely diagnosis is paramount. 9 Emergency Surgical management is the main

stay of treatment. 10,11 Minimal invasive approach is fast becoming popular even in emergency settings. 12

CASE REPORT

15-year-old school boy came with less than 24 hours duration of sudden onset abdominal pain in the epigastrium. The pain was initially dull aching on the right side of abdomen which became very severe and generalized in nature. The pain was associated with few episodes of non-projectile and bilious vomitus which contained undigested food particles. There was no history of any drug intake. Apart from his irregular eating habits, and occasional vague abdominal discomfort, historically there was nothing relevant.

On examination he was looking toxic with poor general condition and severe dehydration. He was febrile with tachycardia, tachypnoeia and signs of peritonism. The abdomen was distended with severe tenderness in the epigastrium and right upper quadrant of abdomen. There was guarding with board like rigidity. There was obliteration of liver dullness. The bowel sounds were diminished. Rectal examination revealed an empty rectum without any bleeding or malena. There was leucocytosis. Amylase was more than 300 IU. Erect Abdomen X ray showed pneumoperitoneum. Ultrasound abdomen showed bulky pancreas along with fluid in the abdomen. A provisional diagnosis of appendicular perforation was made.

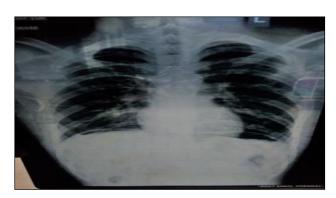


Figure 1: Plain radiograph showing free under the diaphragm.



Figure 2: The perforation noted at gastric antrum.

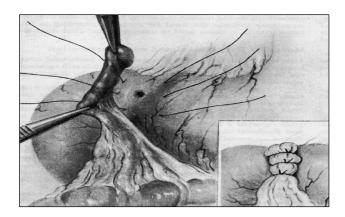


Figure 3: The schema of Graham's Live omental patch closure.

The abdomen was decompressed by Ryle's tube, rehydrated with Intravenous fluids and antibiotics started. Emergency laparotomy and proceed was planned. Intra op there was signs of peritonitis. A gastric perforation of size 2 cms was noticed anteriorly in the distal gastric antrum with pus, flakes and food particles scattered in the peritoneal cavity. There were multiple nodes on the mesentery. After through decontamination and taking biopsies from gastric wall and nodes, the perforation was closed using Graham's Live omental patch closure technique. Abdomen was closed after placing drains. The Biopsy was suggestive of acute inflammatory changes without atypia. Node from mesentery was negative for Tuberculosis by PCR. Serological and stool antigen test done for H. Pylori was negative. The post-operative period was uneventful. The patient was asymptomatic on couple of follow up visits.

DISCUSSION

Etiology of pneumoperitoneum in children and adolescents are relatively few. Often, we consider a perforated appendicitis as a source of free air in the peritoneum and seldom we think of a perforated duodenal and gastric ulcer as a cause. In modern medicine and with the advent of potent medications for peptic ulcerations, acute presentation of the same or its life threatening complications like bleeding or perforation are seldom seen. Peptic ulcer perforation is uncommon in children and is rarely suspected as a cause of acute abdomen. In children, peptic ulcer can be primary associated with Zollinger-Ellison syndrome, sickle cell anemia or secondary to medications like non-steroidal anti-inflammatory drugs or physiological stress such as burns and head trauma. 1-4

Spontaneous gastric ulcerations are very rare with unclear etiology.² Spontaneous gastric perforation in neonates has been reported in the literature. It is rare beyond the neonatal period and still do not have a proper knowledge about its etiology. Congenital defects of the gastric wall, mechanical disruption, stress ulceration secondary to neurogenic disorders, and ischemia of the gastric wall

secondary to vascular shunting, diving reflex and intestinal obstruction all are some postulates. The risk includes prematurity and nasal ventilation. The majority of neonatal gastric perforations occur in the anterior side of the greater curvature.²

Reports of gastric perforation in 3- to 5-year-olds are also uncommon where it is usually due to a casual event such as peptic ulceration, trauma, aerophagia, or drug intake including corticosteroids.² It has been reported in conjunction with Rett syndrome and Burkitt lymphoma. Iatrogenic causes of gastric perforation include blunt trauma due to nasogastric tube placement or overdistention of the stomach due to positive pressure ventilation.

Elevated intraluminal pressure and ischemia of the bowel wall are also cited as possible causes.² According to published cases in literature, peptic ulcerations are more common among male adolescent. A study done by Hua et al reviewed 52 cases of perforated duodenal ulcer in paediatric population. More than 80% were male and 90% were adolescents between the ages of 14 to 18.³

According to Drumm B et al it was noted that the most common etiologies in patient less than 10 years of age were attributed to medications like non-steroidal anti-inflammatory drugs, lymphoma, gastroenteritis, meningitis and malaria (secondary causes). While for the patients above 10 years, it was found that recurrences were common.

Although the prevalence of the H. pylori infection is in decline in west, it is still considered high among Asian and African population.⁵⁻⁸ Paediatric patients most commonly acquire the infection from their mothers, likely as a result of sharing utensils, overcrowding and sharing beds with children. *H. pylori* can be diagnosed by serology, stool antigen, urea breath tests etc.^{5,7,8} However Urease test and histopathological confirmation remains the most accurate. First line of management is by using two antibiotics in conjunction with Proton pump inhibitors for 2 weeks.⁶⁻⁸

Surgical management remains the corner stone in perforated ulcers. 9-11 Traditional open surgical method is usually undertaken. Simple closure with or without Omentum is one of the most commonly used technique. 10 Time should not be wasted after clinical diagnosis for surgery as it can lead to adverse results. In children partial gastrectomy is seldom advised even though in adults for large perforations it is being carried out.

Currently Laparoscopic gastric or duodenal perforation closure is being advocated and gaining popularity due to less morbidity, lesser pain and reduced hospital stay.^{11,12} However laparoscopic suturing techniques takes much longer time and it can be tough on surrounding inflamed tissues as in perforation due to its friability.

CONCLUSION

Duodenal or Gastric perforation is a surgical emergency. It should be included in the differential diagnosis of any patient who presents with sudden severe abdominal pain, distension, and peritoneal signs. In neonates and children, Peptic ulceration and gastric or duodenal perforation is very rare and can be overlooked. The clinical manifestations include: Abdominal pain, dehydration, lethargy, abdominal distension, vomiting, shock and sings of peritonitis.

Radiologic imaging with evidence of pneumoperitoneum is a common radiologic finding in these cases. Treatment is surgical repair of the gastric defect with or without an omental patch. Attempts should be made to investigate the underlying cause. If associated with H. Pylori infection the treatment should address the same to prevent recurrence. Many times, a clear etiology is not present. The causes of these perforations were deemed as spontaneous.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Not required

REFERENCES

- 1. Morrison S, Ngo P, Chiu B. Perforated peptic ulcer in the pediatric population: a case report and literature review. J Pediatr Surg Case Rep. 2013;1(12):416-9.
- 2. Akalonu A, Yasrebi M, Rios ZM. Spontaneous gastric perforation in two adolescents. Am J Case Rep. 2016;17:694.
- 3. Hua MC, Kong MS, Lai MW, Luo CC. Perforated peptic ulcer in children: a 20-year experience. J Pediatr Gastroenterol Nutr. 2007;45(1):71-4.
- 4. Drumm B, Rhoads JM, Stringer DA, Sherman PM, Ellis LE, Durie PR. Peptic ulcer disease in children: etiology, clinical findings and clinical course, Peadiatr. 1988;82(3)(2):410-4.
- 5. Alolayan LI, Alotaibi AS, Alhumaid SRA, Alorainni HA, Alzahrani MA. Perforated duodenal ulcer in a 14-year-old page 3 of 3 epileptic boy. SOJ Surg. 2016;3(2):1-3.
- 6. Baltrūnaitė J, Trainavičius K. Perforated peptic ulcer in children: diagnosis and treatment. Lithuanian Surg. 2015;14(1):38-45.
- 7. Yadav RP, Agrawal CS, Gupta RK, Rajbansi S, Bajracharya A, Adhikary S. Perforated duodenal ulcer in a young child: an uncommon condition. JNMA. 2009;48(174):165-7.
- 8. Mohta A, Shrivastava UK, Gupta BP, Gupt A. Perforated duodenal ulceration in a child. Indian Peadiatr. 2002;39:578-9.
- 9. Leeman MF, Skouras C, Paterson-Brown S. The management of perforated gastric ulcers. International J Surg. 2013;11(4):322-4.

- 10. Arora BK, Arora R, Arora A. Modified Graham's repair for peptic ulcer perforation: reassessment study. Int Surg J. 2017;4(5):1667-71.
- 11. Søreide K, Thorsen K, Søreide JA. Strategies to improve the outcome of emergency surgery for perforated peptic ulcer. British J Surg. 2014;101(1):e51-64.
- 12. Wong BP, Chao NS, Leung MW, Chung KW, Kwok WK, Liu KK. Complications of peptic ulcer

disease in children and adolescents: minimally invasive treatments offer feasible surgical options. J Pediatr Surg. 2006;41(12):2073-5.

Cite this article as: Vasuki R, Arun PS, Moothedath RM. A rare case of spontaneous gastric perforation in an adolescent. Int Surg J 2018;5:3171-4.