

Perforated Duodenal Ulcer In A Child: A Case Report

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Abstract

Perforated duodenal ulcer (PDU) is rare in children. A child presented with acute abdomen and pneumoperitoneum, an appendiceal pathology always suspected more than other causes. Delay or failure in diagnosis and timely management can lead to life threatening consequences. We report a case of adolescent girl presented with acute abdomen, signs of peritonitis and abdominal radiography showed free air under diaphragm. Exploratory laparotomy found PDU with peritoneal contamination. Thorough peritoneal lavage done, perforation closed with omental patch and continued supportive care resulted in gradual improvement. PDU should be considered in the differential diagnosis of children presenting with acute abdomen, especially when imaging showing pneumoperitoneum.

Keywords: Duodenal perforation, Peumoperitoneum, peritonitis

Introduction

Peptic ulcer disease (PUD) in children is unusual and duodenal perforations are rare in children^[1]. Existing literature reporting prevalence of 8.1% from Europe and incidence of 1.55 annual cases from India makes it uncommon diagnosis^[2, 3]. It may not be a primary diagnosis and gets noticed due to development of complications^[4]. Radiological pneumoperitoneum with peritoneal signs arouse suspicion of perforated PUD eventhough appendicitis is commonest cause of acute abdomen in children. We present a rare case, of 13 year adolescent girl presenting with peritonitis and pneumoperitoneum following perforation of duodenum.

Case Report

A 13 year old girl presented with pain abdomen for 2 days. The pain was involving whole abdomen, constant and stabbing which became very severe. It was associated with few episodes of vomiting and breathing difficulty, not passing stool and flatus for 1

day. There was history of cervical tubercular lymphadenitis diagnosed 1 year back and took ATT for 6 month. The child had history of intermittent pain abdomen in epigastric region after completion of ATT for which symptomatically treated by local physician.

On physical examination she was mildly dehydrated, sick looking. She was having tachycardia, tachypnea and low blood pressure. The abdomen was slightly distended with generalized tenderness, guarding and rigidity with absent bowel sounds.

Laboratory investigation revealed neutrophilic leucocytosis (TLC- 18600/cumm, polymorph 96%), dearranged liver function test (s.billirubin -3.7 mg/dl, PT/INR- 21.3/1.83), prerenal azotemia (urea- 62 mg/dl, creatinine- 1.4mg/dl), serum amylase 436mg/dl and lipase 1835 mg/dl. The erect abdominal radiography showed bilateral gas under diaphragm with diffuse opacity of whole abdomen

suggestive of hollow viscous perforation with peritonitis (Figure 1).

Child was stabilized at emergency room by intravenous rehydration and broad spectrum antibiotics started empirically before surgery. Exploratory laparotomy was performed and found



Figure 1

full of yellowish colored peritoneal fluid, plenty of flakes and perforation of 5mm size located in first part of duodenum (Figure 2). Thorough peritoneal lavage done, perforation closed with omental patch. Corrugated drains put on both flanks and wound closed in layers.

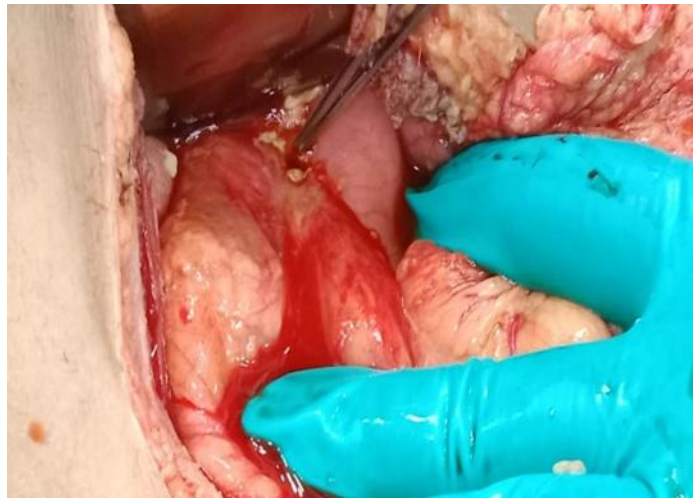


Figure 2

Postoperatively, she was monitored in pediatric intensive care unit with continuation of supportive care. Nasogastric decompression, intravenous fluid and antibiotics continued. Oral feeding started on post operative day 5 as there was decreased volume and clearing of Ryle's tube aspiration, passage of flatus. Nasogastric decompression discontinued on day 7 and makes full oral feed. On the post-operative day 10, the patient was discharged with pantoprazole for 1 month. Serum gastrin level was normal. Rest of post-operative period was uneventful. She was asked for follow up after 1 month for upper GI endoscopy.

Discussion

When a child presented with peritoneal signs and radiographic findings of free subdiaphragmatic air, perforated appendiceal pathology is commonly suspected owing to its relative likelihood^[5,6]. However perforated duodenal ulcer (PDU) can also present with similar findings as in our case.

The primary factors associated with peptic ulcer disease (PUD) are blood group O, H.pylori infection, sickle cell disease and Zollinger-Ellison syndrome

^[7]. Secondary factors are medication like NSAID or steroids, severe systemic illness, neurotrauma, burn^[2,3]. Apart from these, unusual pathologies such as malaria, gastroenteritis, meningitis and even lymphoma have been reported in causation of PDU^[5,8]. Our patient probably had gastritis secondary to prolonged ATT for lymphnode Tuberculosis.

This disease can be seen at any age, but it becomes more frequent after the age of 12 years^[9] and it is more common in male adolescents. Hua et al. Study showed that out of 52 perforated peptic ulcer cases 80% patients were male and 90% were adolescents^[1].

Irrespective of known associations the outcomes depend on timely intervention. Operative delay beyond 12 hours, age, female gender and large perforation all in past seems to have poorer outcomes^[1,2]. Contrast to our case, though operation delay beyond 12 hours and the patient presented with sepsis and shock, the outcome was good.

The treatment of PDU is surgical repair which can be achieved either with laparotomy or laparoscopy

depending of expertise and level of peritoneal contamination. Simple closure of perforation with or without omentopexy is one of the most commonly used techniques^[10].

The proton pump inhibitors are recommended for 8 weeks, combined with antibiotic treatment of H.pylori if detected to reduce the risk of recurrence and its complications^[11]. An endoscopic examination should be performed post-operatively to better explore and control the surgical site and to identify other possible underlying lesions that may predispose to perforation recurrence^[11].

Conclusion

Duodenal ulcer perforation should keep as differential diagnosis though appendicular perforation is most common when child presented with peritoneal signs. Pneumoperitoneum is a common radiological finding in these cases. This condition is a surgical emergency and should be treated to avoid morbidities and mortalities. Treatment option is surgical repair of the perforation site, either by laparotomy or laparoscopy. Post-operative investigation must focus to find out underlying cause. If H.pylori is detected, it must be treated to avoid recurrence.

References

1. Hua MC, Kong MS, Lai MW, Luo CC. Perforated peptic ulcer in children: A 20-year experience. *J Pediatr Gastroenterol Nutr* 2007; 45:71-4.
2. G. Hattingh, R.D. Salas-Parra, A. Nuzhad, J. Salvador, and D.T. Farkas, "Duodenal perforation in the pediatric population: two rare cases at a small community hospital," *Journal of Surgical Case Reports*, vol. 2020, no. 11,2020.
3. S. Goyal, A. Garg, and S. Goyal, "Peptic perforation in children: A diagnostic dilemma,"2017.
4. Lee NM, Yun SW, Chae SA, Yoo BH, Cha SJ, Kwak BK. Perforated duodenal ulcer presenting with massive hematochezia in a 30-month-old child. *World J Gastroenterol* 2009;15:4853-5.
5. S. Morrison, P. Ngo, and B. Chiu, "Perforated peptic ulcer in the pediatric population: A case report and literature review," *Journal of Pediatric Surgery Case Reports*, vol. 1, no. 12, pp. 416–9, 2013.
6. R. S. Sisodiya, S. K. Ratan, and B. Tripathi, "Perforated duodenal ulcer: A rare cause of acute abdomen in children," *MAMC Journal of Medical Sciences*, vol.2, no.3, p.155, 2016.
7. C. Acıpayam, G. Aldic, B. Akçora, M. Çelikkaya, H. Askar, and B. Dorum, "Duodenal perforation: An unusual complication of sickle cell anemia," *Pan African Medical Journal*, vol. 18, 2014.
8. N.K. Dewanda and M. Midya, "Perforated duodenal ulcer in a child: An unusual complication of malaria," *Medical Journal of Dr Patil University*, vol. 8, no. 2, p.261, 2015.
9. Bott L, Vara D, Missotte I, Ménager C. Perforated gastric ulcer in the child: a rare complication, a case report. *Arch Pediatr*. 2003; 10:31-3.
10. Arora BK, Arora R, Arora A. Modified Graham's repair for peptic ulcer perforation: Reassessment study. *Int Surg J* 2017; 4:1667-71.
11. Søreide K, Thorsen K, Harrison EM, Bingener J, Møller MH, Ohene-Yeboah M, et al. Perforated peptic ulcer. *Lancet* 2015; 386:1288-98