Perforated duodenal ulcer a rare cause of acute abdomen in infancy: A report of two cases

Yogender Singh Kadian, Kamal Nain Rattan, Amit Malik

ABSTRACT

Duodenal ulcer perforation is very uncommon in infants and children, that is why it is not usually considered in the differential diagnosis of acute abdomen in this age group. Moreover, the diagnosis of this condition is usually overlooked because of vague and variable symptoms and low index of suspicion on the part of the treating physicians. In this brief report, we are reporting two cases of successfully managed perforated duodenal ulcer in infancy.

Key words: Duodenal ulcer, perforation.

INTRODUCTION

Duodenal ulcer disease is a rare clinical condition managed by clinicians in infancy and childhood. Because of its rarity and low index of suspicion on the part of physicians, it usually presents with serious complications like perforation or gastrointestinal hemorrhage.[1] In earlier times, the mortality for duodenal ulcer perforation in childhood was very high as in one of the reported series only 50 cases out of 118 survived.[1] However in recent years improvement in pre- and postoperative care of children, refinement of parental nutrition, development of antibiotics, and advancement in life support system along with development of paediatric surgery as a subspeciality, have all added to improved outcome in perforation peritonitis.[2] There are isolated reports of successful management of perforated duodenal ulcer in children.[3,4] The present report adds two more cases of successful surgical management of duodenal ulcer perforation peritonitis in childhood.

Department of Paediatric Surgery, Pt. B.D. Sharma PGIMS, Rohtak - 124 001, Haryana, India

Correspondence:
Dr. Yogender Singh Kadian,
6/9J, Medical Enclave, PGIMS, Rohtak - 124 001, Haryana, India.
E-mail: nkadian@gmail.com

CASE REPORTS

Case 1

A 4-month-old female child was admitted with pain and distension abdomen, vomiting and nonpassage of flatus, and stool for 2 days. There was a preceding history of treatment by a private practitioner for fever and pneumonitis which included nonsteroidal anti-inflammatory drugs (NSAIDS) (Mefenamic acid, Ibuprofen) and antibiotics. On examination the child was dehydrated, anicteric, had tachycardia and tachypnoea. Abdominal examination revealed guarding and rebound tenderness suggestive of perforation peritonitis. Plain X-ray abdomen revealed huge amount of air below both domes of diaphragm [Figure 1]. After resuscitation, the child was operated and operating finding was a single perforation on posteromedial wall of the first part of duodenum, which was closed with an omental patch. The child had a smooth postoperative period and discharged on the seventh postoperative day. Serum gastrin level in the postoperative period was normal.

Case 2

A 11-month-old male child was admitted with 10 days history of fever, rashes, and vesicular eruptions over the



Figure. 1: X-ray abdomen showing air under both domes of diaphragm

body, and a probable diagnosis of measles was made. There was history of distension abdomen, vomiting, and nonpassage of stool for 72 h. The child had received NSAIDS (Mefenamic acid, Paracetamol) and antibiotics from a private practitioner for fever and pneumonitis. The child appeared lethargic, dehydrated, and anemic, and had tachycardia and tachypnea. The abdomen was distended, tender to touch and demonstrated guarding and rebound tenderness. Rectal examination revealed an empty rectum. Plain X-ray of abdomen showed pneumoperitoneum.

The patient was taken up for exploration laboratory after resuscitation. Operative findings were - bilious collection in peritoneal cavity and a small perforation in the anterior wall of the first part of duodenum. Simple closure of the perforation with omental patch and a peritoneal lavage was done and abdomen closed over a drain. The postoperative period was uneventful. The serum gastrin levels were done postoperatively within normal limits.

DISCUSSION

Duodenal ulcer disease is not commonly seen in paediatric surgical practice until it is complicated by bleeding or perforation.[5] Its exact incidence and pathogenesis is debatable. In one Indian series, the reported incidence is 1.55 cases per year in children.[6] Perforation may complicate acute or chronic duodenal ulceration. Acute ulcer in the neonate may develop with prematurity, anoxia, abdominal distension, or hyperacidity. It has been suggested that anoxia may be associated with selective shunting of blood leaving relatively ischemic areas in gastrointestinal tract.[7] Acute ulceration in infants or children may be secondary to stress, sepsis, malnutrition, trauma, steroid, NSAIDs, and major surgery.[1,8] In the present report, both the cases had acute ulceration and perforation following pneumonia, fever, intake of NSAIDs medications. In postoperative period serum gastrin level were assessed and were within normal range in both our cases. This serum gastrin estimation was done to rule out conditions like antral gastrin cell hyperfunction and gastrinomas which may present as complicated duodenal ulcer in paediatric age group.[9] Duodenal ulcer in children can also be associated with Zollinger Ellison syndrome, sickle cell anemia, *Helicobacter pylori* infection and blood group O. But this association is commonly seen with chronic duodenal ulceration rather than acute cases. Duodenal ulcers associated with *H. pylori* infection are seldom seen in children under 10 years of age, but NSAID-related ulcers are now being seen more frequently because of increased use of these drugs.[10]

The clinical picture after perforation of an acute duodenal ulcer may be those of an acute abdomen, but the signs may be masked especially in the presence of other illness. Among the investigations, plain X-ray of abdomen with subdiaphragmatic gas on the right side is usually pathognomonic of duodenal perforation. No other investigation like contrast studies is required in emergency settings.

The treatment of perforated duodenal ulcer is surgical repair. Various surgical procedures described include simple closure with omental patch, truncal vagotomy and drainage procedure, hemigastrectomy, etc.[1] The simple closure of perforation with omental patch with care not to obstruct the lumen is commonly done in emergency settings. In present case also perforation was closed with omental patch. Acute duodenal ulcer in children rarely recurs after treatment of the presenting problem. Moreover, vagotomy in children causes more gastrointestinal dysfunction than in adults.[1]

To summarize, although acute duodenal ulcer perforation is a rare surgical emergency in infancy, a high index of suspicion should be kept in cases presenting as acute abdomen following medical conditions which require frequent use of NSAID therapy.

REFERENCES

1. Johnstone JM, Rinstoul RF. Perforated duodenal ulcer in childhood. Br J Surg 1972;59:288-9.
2. Tan Cel, Kiely EM, Agrawal M, Brereton RJ, Spitz L. Neonatal gastrointestinal perforation. J Pediatr Surg 1989;24:888-92.
3. Mohta A, Shrivastava UK, Gupta BP, Gupt A. Perforated duodenal ulcer in a child. Indian Pediatr 2002;39:578-9.
4. Al-Samarrai AI. An unusual cause of acute abdomen in an adolescent. Saudi J Gastroenterol 2004;10:34-6.
5. Gryboski JD. Peptic ulcer disease in children. Med Clin N Am 1991;75:889-902.
6. Maudar KK, Dutta J, Mitra S. Duodenal ulcer disease in children. World J Surg 1980;4:261-5.
7. Lloyd JR. The etiology of gastrointestinal perforations in the newborn. J Pediatr Surg 1969; 4: 77-80.
8. Hernandez DS, Rodrigulz AG. Association between non steroidal anti inflammatory drugs and gastrointestinal tract bleeding perforation: An overview of epidemiologic studies published in 1990s. Arch Intern Med 2000;160:2093-9.
9. Annibale B, Bonamico M, Rindi G, Villani L, Ferrante E, Vania A, *et al*. Antral gastrin cell hypersecretion in children: A functional and immunocytochemical report. Gastroenterology 1991;101:1547-51.
10. Torres J, Perez PG, Goodman KJ. A comprehensive review of the natural history of helicobacter pylori infection in children. Arch Med Res 2000;31:431-69.

Source of Support: Nil, **Conflict of Interest:** None declared.