Idiopathic Neonatal Colonic Perforation- A Case Report

Nilottpal Dey Jr · Lekhachandra Sharma ·
Birkumar Sharma · Kh. Sharat Chandra ·
Kh. Gojen Singh · Ashem Jack Meitei

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Abstract Perforation of the transverse colon in neonate is a rare finding in clinical practice. We report a case of Idiopathic neonatal colonic perforation in a twenty-one days old, healthy, female neonate without any demonstrable cause. She presented with abdominal distention and constipation. Abdominal radiograph showed massive pneumoperitoneum. On exploration, transverse colonic perforation was found near splenic flexure area. The perforation was closed primarily. Other than inflammatory fibrin flakes the rest of the large intestine and small bowel appeared normal. Hirschsprung's diseases, necrotizing enterocolitis, small left colon syndrome, atresia, imperforate anus, cystic fibrosis are some causes of colonic perforation in neonates. However none of the clinical features or intra-operative finding of the above conditions could be found in our case. At follow-up, the baby showed normal weight gain without any symptoms.

Keywords Transverse colon · Idiopathic perforation · Neonate

Introduction

Gastrointestinal perforation is an abdominal surgical emergency in the pediatric population, but is seldom reported. Although perforation is commonly observed in the small intestine during the neonatal period, perforation of the colon is a rare condition. Idiopathic perforation of the

bowel, also known as spontaneous intestinal perforation, occurs without any demonstrable cause. It was first described in newborns as early as 1825. Necrotizing enterocolitis, meconium ileus and Hirschsprung's disease are important causes of colonic perforation in newborn period [14, 15]. Idiopathic perforation of the transverse colon in newborn is rare and is infrequently reported. We report a case of idiopathic perforation of the transverse colon in a twenty one day old female child.

Case Report

A twenty one day old female child was referred from paediatric department with the complaints of constipation, abdominal distention for past three days. She is the first live baby of the couple, born as a full term baby (birth weight= 2.4 Kg) by caesarian section. Baby cried well after birth and passed meconium on day two of life. The post-natal period was uneventful until she developed the above symptoms. There was history of accidental miscarriage in the 5th month of pregnancy last year. Past few months of pregnancy was uneventful. No history of any related illness in the family was found.

On clinical examination, the child was alert with heart rate 120beats/min and mild dehydration. Her abdomen was distended but soft and lax, without any redness of abdominal wall, bowel sound was present. Rectal examination revealed an empty rectum and no gripping. Hb-13.5 gm%, serum urea-20 mg%, serum creatinine-0.9 mg% S.alb-3.1 mg%. Plain X-ray abdomen in erect position showed a massive pneumoperitoneum bilaterally (Fig. 1). Clinical diagnosis of perforation peritonitis was made at this stage and she was kept nil per oral with nasogastric tube suction. Intravenous fluids and antibiotics were started.

N. Dey Jr · L. Sharma (✉) · B. Sharma · K. S. Chandra ·
K. G. Singh · A. J. Meitei
Regional Institute of Medical Sciences,
Imphal, Manipur, India
e-mail: lekhachandrasharma@yahoo.com

Fig. 1 Massive pneumoperitonium (X-ray Erect abdomen)

Exploratory laparotomy was done through midline incision, peritoneum was found to be contaminated and bowel loops were matted with flakes (Fig. 2). Single perforation (0.3×0.3 cm) was found in the distal transverse colon near splenic flexure in the anti-mesenteric border (Fig. 3). The colon was of normal size showing no feature suggestive of adhesive band or atresia. Primary closure of the perforation was done in two layers using polyglactin 910(vicryl) & silk 3-0. The post-operative recovery was uneventful and the child thrived well. Biopsy report from the edge of perforation did not lead to any specific pathological diagnosis. The child is growing well after.

Fig. 2 Matted small bowel loops

Fig. 3 Transverse colon perforation site

Discussion

Idiopathic colon perforation in neonate is extremely rare, and early diagnosis and prompt surgical treatment is life saving [1–3]. Such perforations have been explained on the basis of trauma or mechanical obstruction. Traumatic causes include trauma from rectal thermometer, barium enemas or other rectal instrumentation. (in our case no such history was there). Touloukioan et al. [4] suggested that anoxia or hypoxia can cause mucosal ischemia and subsequent necrotizing enterocolitis in piglets and this etiology may certainly be related to hypoxic neonates. Weinberg et al. [5] also suggested ischemic necrosis (secondary to a much localized vascular accident in the wall of the affected bowel) as a likely aetiology. In their series, 6 of the perforations were on the anti-mesenteric wall of the intestine, the terminal point of the vascular supply of the area, and they explained it by a vascular theory. But in our patient there was no feature suggestive of necrotizing enterocolitis neither there was any gross localized ischemia. Mechanical obstruction causes blow out of proximal colon by colonic atresia, imperforate anus, meconium plug, small left colon syndrome, Hirschprung's disease or obstructive bands [6–9]. But in our patient the features suggestive of these condition were absent. Colonic perforation of unknown causation also occurs in the newborn infant. Many factors might play a role in the development of idiopathic perforation of the colon. Invasion of the intestinal wall by coliform bacteria [10] and local Schwartzman reaction induced by bacterial endotoxins [11] were proposed as possible mechanisms for spontaneous colonic perforation in neonates. Many cases of idiopathic perforation of colon in neonates, without obvious demonstrable cause, may be due to pseudo obstruction of the left colon. Small left colon syndromes in babies are usually born to diabetic mothers.

Hypoglycemic attacks in such infants lead to increased glucagon secretion leading to reflex spasm of smooth muscles and thus causing pseudo-obstruction.

It is characterized by presence of colonic distention without mechanical obstruction. There are many reports in adult literature about this syndrome causing colonic perforation [12, 13]. But in our patient both proximal and distal colon was normal and the mother was non-diabetic. In the presence of a massive pneumoperitoneum in a neonate, both gastric and colonic perforation should be considered [14, 15]. The abdominal upright film will show the “saddle” or “football” sign due to massive pneumoperitoneum [16]. Babies with colonic perforation in the absence of necrotizing enterocolitis have better survival if prompt and proper treatment is offered [15]. A primary closure or a resection and anastomosis may be performed in hemodynamically stable patients with well-localised and single perforation. On the other hand, the exteriorisation of the perforated area of the colon may be safer in unstable patients associated with severe peritoneal contamination and ischemic bowel [17]. Our patient had a favorable outcome and is alive and well after completion of surgical treatment. This is probably an idiopathic perforation of transverse colon because no clear cause could be demonstrated. There was no clinical, radiological or histopathological evidence of diseases like necrotising enterocolitis, Hirschsprung’s disease or meconium ileus and related diseases.

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