

## Case Report

**Idiopathic Perforation of Caecum in a Neonate: Case Report**

Sunil Kumar Yadav, Safwat Helmi, Saleema Al-Ramadan

Department of Pediatric Surgery, Ibn Sina hospital, Kuwait

Kuwait Medical Journal 2005, 37 (1): 47-49

**ABSTRACT**

We report perforation of the caecum without a demonstrable cause in a three days old, healthy, male neonate. He presented with abdominal distention and constipation. Abdominal radiograph showed massive pneumoperitoneum. Caecal perforation was found on exploration. The perforation was closed and a protective proximal

ileostomy was performed. The rest of the large intestine and small bowel appeared normal. Hirschsprung's disease was ruled out by multiple seromuscular biopsies. At a three monthly follow-up after closure of ileostomy, the baby showed normal weight gain without any symptoms.

Key Words: caecum, idiopathic perforation, neonate

**INTRODUCTION**

Idiopathic perforation of the bowels, also known as spontaneous intestinal perforation, occurs without any demonstrable cause. It was first described in newborns as early as 1825. Necrotising enterocolitis, meconium ileus and Hirschsprung's disease are important causes of colonic perforation in newborn period<sup>[1,2]</sup>. Idiopathic perforation of the caecum in newborns is extremely rare and is infrequently reported<sup>[3,4]</sup>. We report a case of idiopathic perforation of the caecum in a three-day old male and discuss the management of the case and its follow-up. The possible theories regarding etiology of this condition are also discussed.

**CASE REPORT**

A three- day old male child was referred to us because of constipation, abdominal distention and failure to pass urine for the last 24 hours. He passed meconium on day two of life after a rectal suppository. He is the second baby of the couple after a consanguineous marriage. He was born as a full term baby (birth weight = 3.1 Kg) by normal vaginal delivery. The post-natal period was uneventful until he developed the above symptoms. There was no history of any related illness in the family.

On clinical examination, the child was tachycardic, tachypnic and dehydrated. His abdomen was distended but soft and lax, without any redness of abdominal wall. Rectal examination revealed an empty rectum. The routine hemogram and biochemical investigations were normal. Blood culture showed growth of serratia organism. Plain X-ray abdomen in erect position showed a massive

pneumoperitoneum (Fig. 1). Clinical diagnosis of perforation peritonitis was made at this stage and he was kept nil per oral with nasogastric tube suction. Intravenous fluids and antibiotics were started. Exploratory laparotomy was done through a right upper abdominal incision. The peritoneum was grossly contaminated and there was a perforation in the caecum. Ascending and transverse colon up to the mid-transverse colon looked dilated while the rest of the distal colon was collapsed. The small bowels were normal and no other pathology was detected. We closed the caecal perforation and performed an ileostomy in the terminal ileum. Biopsy was taken from the edge of the perforation. Seromuscular biopsies were taken from ileum at the site of ileostomy, caecum, ascending colon, transverse colon, descending colon and rectum at peritoneal reflection to rule out Hirschsprung's disease. The appendix was also removed and sent for histopathological examination.

The post-operative recovery was uneventful and the child thrived well on ileostomy. Biopsy report from the edge of perforation did not lead to any specific pathological diagnosis.

Seromuscular biopsies revealed normal ganglion cells and Hirschsprung's disease was ruled out. Ultra short segment of Hirschsprung's disease was excluded by a suction rectal biopsy later on. After demonstrating normal anatomy by distal loopogram we closed the ileostomy when he was four months old. The child is growing well after completion of all the surgical stages and is now seven months old.

Address correspondence to:

Dr. Saleema Al-Ramadan, Head, Department of Neonatal and Paediatric Surgery, Ibn Sina Hospital, PO Box 25427, Safat 13115, Kuwait. Tel: 4834794, Email: sunilyadav@hotmail.com



Fig.1: Plain X-ray abdomen (erect film) showing massive pneumoperitoneum

## DISCUSSION

Isolated caecal perforation in the neonatal age is rare and it is mostly secondary to necrotising enterocolitis, Hirschsprung's disease or meconium ileus. Neonatal small left colon syndrome, typically occurring in babies born to diabetic mothers, is also responsible for few cases of isolated perforation of the colon<sup>[5]</sup>. None of these seem to be the cause of caecal perforation in our case. After evaluating the clinical picture, radiological investigations, intraoperative and histopathological findings, we label this case as idiopathic perforation of the caecum. There are only occasional reports in the literature of this entity in the neonatal period. Many factors might play a role in the development of idiopathic perforation of the caecum. Invasion of the intestinal wall by coliform bacteria<sup>[6]</sup> and local Schwartzman reaction induced by bacterial endotoxins<sup>[7]</sup> were proposed as possible mechanisms for spontaneous colonic perforation in neonates. Our patient had a positive growth of serratia in blood. The perforation could have been a local manifestation of this systemic bacterial infection.

The caecum is more prone for perforation because of its wide diameter. Laplace law of physics explains this fact. The law states that "pressure required to stretch the walls of a hollow viscus decrease in inverse proportion to its radius of curvature". The right colon acts as a closed loop in distal bowel obstruction in the presence of competent ileocaecal valve. Therefore, there are high chances of caecal perforation in these situations. Distal bowel obstruction could be in the form of left colonic atresia, rectal atresias, meconium plugs or Hirschsprung's disease. The phenomenon of acute colonic pseudo-obstruction was described by Ogilvie in 1948. It is characterized by presence of colonic distention without mechanical obstruction. There are many reports in adult literature about this syndrome causing caecal perforation<sup>[8,9]</sup>. Many cases of idiopathic perforation of caecum in neonates, without obvious demonstrable cause, may be due to pseudo-obstruction of the left colon. This may be the case with small left colon syndrome in babies 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.

Babies with colonic perforation in the absence of necrotising enterocolitis have better survival if prompt and proper treatment is offered<sup>[2]</sup>. Our patient also had a favorable outcome and is alive and well after completion of surgical treatment. This is probably an idiopathic perforation of caecum 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. Not much has been written about idiopathic perforation of caecum in the newborn period. Neonates with functional or organic obstruction in the distal colon need close observation and possible decompression as failure to do so may result in caecal perforation.

## REFERENCES

1. Tan CEL, Kiely EM, Agrawal M, Brereton RJ, Spitz L. Neonatal Gastrointestinal Perforation. *J Pediatr Surg* 1989; 24:888-892.
2. Grosfeld JL, Molinari F, Chaet M, Engum SA, West KW, Rescorla FJ, Scherer LRT. Gastrointestinal perforation and peritonitis in infants and children: Experience with 179 cases over ten years. *Surgery* 1996; 120:650-656.
3. Nixon GW, Condon VR, Stewart DR. Intestinal perforation as a complication of the neonatal small left colon syndrome. *Am J Roentgenol radium Ther Nucl Med* 1975; 125:75-80.
4. Zamir O, Goldberg M, Udassin R, Peleg O, Nissan S, Eyal F. Idiopathic Gastrointestinal Perforation in the Neonate. *J Pediatr Surg* 1988; 23:335-337.
5. Philippart AI, Reed JO, Georgeson KE. Neonatal small left

- colon syndrome: intramural not intraluminal obstruction. *J Pediatr Surg* 1975; 10:733-740.
6. Niehius LI. Idiopathic colon perforations in the newborn. *Arch Surg* 1968; 96:1008-1014.
  7. Herman RE. Perforation of the colon from necrotizing colitis in the newborn. Report of a survival and a new etiologic concept. *Surgery* 1965; 58:436-441.
  8. Valero Gassala J, Vazquez-Barro A, Pousa Real F, Martelo Villar F. Acute colonic pseudo-obstruction in a burn patient. *Burns* 1993; 19:538-540.
  9. Hart MB, Rosemurgy AS. Cecal pseudo-obstruction. Early therapy should be non operative. *Am Surg* 1990; 56:43-46.