

Typhoid sigmoid colon perforation in an 18-month-old boy

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Background: Typhoid fever is a severe infective disease endemic in the areas where sanitation is poor. Its serious complication is bowel perforation with terminal ileum as the commonest perforation site. We report a case of an extremely unusual site of perforation in sigmoid colon due to typhoid fever.

Methods: An 18-month-old boy presented with no passage of flatus and feces along with guarding and rigidity. Exploratory laparotomy revealed sigmoid colon perforation and Widal test was strongly positive for typhoid fever. Sigmoid loop colostomy was performed on the patient.

Results: Postoperative period was uneventful. Colostomy started functioning on the 4th post-operative day. There was superficial wound dehiscence. The patient was given oral food intake on the 7th post-operative day. He was discharged from the hospital in satisfactory conditions on the 10th day after operation.

Conclusions: While tackling a case of enteric perforation suspected with typhoid fever, one should keep in mind the extremely rare site of sigmoid colon perforation.

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Key words: intestinal perforation;
sigmoid colon;
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Introduction

Typhoid fever is one of the common tropical gastrointestinal diseases. It can lead to severe morbidity and mortality and timely intervention can prevent this. The classical findings of typhoid

fever include rose spots, relative bradycardia, and stepwise fevers, but unfortunately these signs are frequently absent. Gastrointestinal manifestations may include diffuse abdominal pain, bleeding, perforation, cholecystitis and cholangitis.^[1] The serious complication of this disease is bowel perforation. Intestinal perforation resulting from a complication of typhoid fever has always been of concern because of its high morbidity and mortality rates.^[2] Terminal ileum is the commonest site of perforation.^[2] We report a case of an extremely unusual site of perforation in sigmoid colon caused by typhoid fever.

Case report

An 18-month-old boy was admitted to our department with a history of fever for 11 days, abdominal distension, and no passage of flatus and feces for 2 days. He had been treated in a private hospital for 7 days conservatively with intravenous fluids and antibiotics. The antibiotics given included ceftazidime, ampicillin, cloxacillin and metrogyl. On examination, the general condition of the patient was poor. Pulse rate was 126/min and respiratory rate was 29/min. Abdominal distension, guarding and rigidity were observed but no rebound tenderness. Bowel sounds were absent. No rose rash or hepatosplenomegaly were found. Abdominal X-ray examination in erect was showed multiple air fluid levels but no free air under the diaphragm. Hemogram showed leucocytosis with predominance of neutrophils but no eosinopenia. Widal test was strongly positive for *S. typhi* 'O' (positive at the 1/320 dilution) and *S. typhi* 'H' (positive at the 1/160 dilution) and negative for *S. paratyphi*. The fresh blood sample was rechecked at the hospital and gave the same result. Bacterial cultures of blood, bone marrow and stool, and immunological test were not done in light of the strongly positive Widal test. Abdominal ultrasonography showed fluid collection. The patient was HIV negative on a rapid card test which was done after informed consent was obtained from the parents.

The patient was resuscitated by administration of intravenous fluids and nasogastric decompression. Exploratory laparotomy was done about 7 hours after

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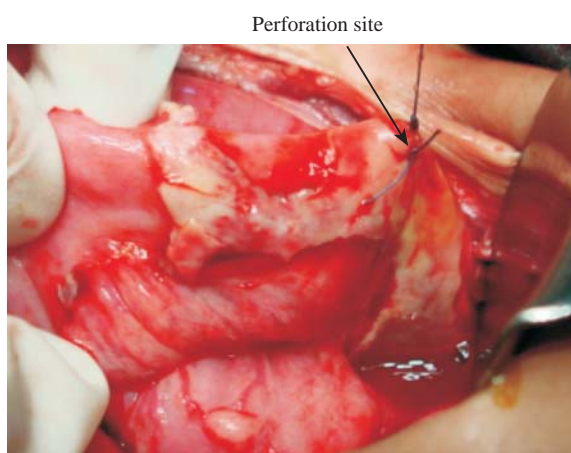


Fig. Sigmoid colon perforation.

admission. On exploration, there was fecal fluid in the peritoneal cavity and edematous bowel with flakes over it suggestive of bowel perforation. The mesenteric nodes were enlarged. A diagnosis of enteric perforation caused by typhoid fever was made. Initially small bowel was explored for the perforation site but no site could be found. Thereafter, the colon was searched starting from the ascending colon. To our surprise there was a single perforation of 1.5 cm in the sigmoid colon (Fig.). Attempts to close the perforation failed because of the extreme friable condition of the colon. A loop colostomy was fashioned at the perforation site in the left iliac fossa. In the post-operative period, the patient was initially given ceftriaxone (50 mg/kg IV every 12 hours), amikacin (7.5 mg/kg IV every 12 hours) and ornidazole (10 mg/kg IV every 12 hours) for 2 days and then ceftriaxone was replaced by ofloxacin (7.5 mg/kg IV every 12 hours) as the peritoneal fluid culture report showed resistance to ceftriaxone. It was continued for 10 days followed by cefixime for 7 days. There was superficial wound dehiscence in the post-operative period and delayed functioning of colostomy which started functioning on the 4th post-operative day. The patient was allowed oral food intake on the 7th post-operative day. He was discharged from the hospital in satisfactory conditions on the 10th day after operation and followed up thereafter. Histopathologically, the specimen taken from the perforation site showed nonspecific colitis with adjoining areas of ischemic necrosis and there was no evidence of typhic corpuscles. Colostomy was functioning satisfactorily during the follow-up with no evidence of prolapse or retraction. The Widal test repeated 1 month after the discharge showed *S. typhi* 'O' positive at the 1/160 dilution and *S. typhi* 'H' positive at the 1/160 dilution. The patient is still awaiting for colostomy closure.

Discussion

Typhoid fever is endemic in India. A study in an urban slum showed 1% of children up to 17 years old suffered from typhoid fever every year.^[3] We admit and treat about 60 to 80 patients of typhoid bowel perforation each year. Its incidence is highest in 5 to 25 years old.^[4] It is a global health problem and is also seen in children of less than 3 years old.^[4]

Typhoid fever is diagnosed clinicopathologically. A positive Widal test is suggestive of typhoid fever, but negative test does not rule it out. Bacterial isolation by culture of blood, bone marrow, urine or stool is confirmatory of typhoid fever. However, in case of perforation, laboratory confirmation of a clinical diagnosis is difficult because blood or bone marrow often do not show positive results.^[5] This is probably due to prior treatment with antibiotics before samples are taken for cultures.^[5] Polymerase chain reaction of intestinal tissue can detect *S. typhi* DNA and the result has been found to be specific.^[5]

Terminal ileum is the commonest site of perforation.^[2] Histologically typhoid perforation is chronic, but discrete inflammation around the perforation site, with relatively mild to moderate mucosal changes.^[5] This finding was also seen in our patient. Surgical options for perforation include primary closure, wedge resection, resection anastomosis, and ileostomy.^[6,7]

Significant factors contributing to mortality and morbidity are prolongation of perforation and operation time along with severe peritonitis.^[7-9] The factors leading to occurrence of typhoid fever and its consequences are lack of civic facilities like clean drinking water and sewage disposal, poverty, poor yield of primary health care system causing a delay in diagnosis, atypical presentation of typhoid and gastrointestinal perforation due to the emergence of multi-drug resistant strains of *Salmonella typhi*.^[10]

Some recommendations could improve the outcome: aggressive resuscitation by intravenous hydration for 4 to 6 hours, associated with adequate antibiotic therapy and a large abdominal washout.^[6,11]

Though ileum is the commonest site of perforation, there are sporadic reports on colon involvement,^[2,12,13] indicating that colon is an extremely uncommon site for perforation in typhoid fever cases. Literature review found only 2 cases of isolated single sigmoid colon perforation,^[2] suggesting that it is a rarer site of typhoid bowel perforation.

Other causes of colonic perforation may include infection with *Salmonella typhimurium*, *Yersinia enterocolitica*, pseudomembranous colitis, tuberculosis, amebiasis, viral and fungal infections, particularly

cytomegalovirus and histoplasmosis, and inflammatory conditions such as Crohn's disease and ulcerative colitis.^[14] Although few reports described primary closure as the first option,^[14] it is better to do the colostomy at the first stage if the colon is friable as in our patient.

Although animal data suggest that flouoroquinolones like ofloxacin damage cartilage, it has never been confirmed in humans. Studies in pediatric patients with cystic fibrosis and typhoid suggest that these drugs are highly effective and well-tolerated and have no short- or long-term adverse effects.^[15]

In conclusion, in case of typhoid fever, the whole bowel including the sigmoid colon needs to be explored before a diagnosis of sealed perforation is made.

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