Spontaneous cecal perforation secondary to acute fulminant gastroenteritis: report of a rare case

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Acute gastroenteritis and food poisoning are the two common diagnoses considered when two or more family members present with vomiting, diarrhea, and abdominal pain. Acute fulminant gastroenteritis is usually seen in immunocompromised patients and is associated with significant morbidity and mortality. We report a 15-year-old boy who presented with acute onset abdominal pain, vomiting, and diarrhea, along with three other family members. He developed abdominal distension and signs of hollow viscus perforation after 3 days; by that time he had developed respiratory distress requiring ventilatory assistance. During laparotomy, a 1-cm cecal perforation with feculent peritoneal contamination was noted. Limited ileocolic resection and ileostomy was performed and ileostomy closure was carried out at 6 weeks. This case is being reported to highlight the unusual presentation of fulminant gastroenteritis, leading to spontaneous cecal perforation. *Ann Pediatr Surg* 10:12–13 © 2014 Annals of Pediatric Surgery.

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Introduction

Acute gastroenteritis and food poisoning are two commonly considered diagnoses when two or more family members present with vomiting, diarrhea, and abdominal pain. It can be fulminant in immunocompromised patients and significantly increases the morbidity and mortality. Cecal perforation presenting as acute fulminant gastroenteritis is rare. Spontaneous cecal perforation can occur because of trauma, malignant obstruction, ingested foreign bodies, volvulus, inflammatory conditions, and infections [1]. In our patient, cecal perforation had occurred following a fulminant gastroenteritis.

Case summary

A 15-year-old boy presented to the emergency medical services department in our hospital, with diffuse abdominal pain, vomiting, and watery foul-smelling diarrhea with mucus for 4 days. Three other family members also presented with similar complaints. They had consumed ragi bread 4 days back. Medical management was carried out with a diagnosis of food poisoning. The other members recovered but this boy developed progressive abdominal pain and distension. He was tachypneic. The abdomen was nontender and there were neither peritoneal signs nor abdominal distension. He had neutrophilic leukocytosis. Microscopic examination of the stool revealed hookworm ova. Ultrasonogram of the abdomen showed particulate ascites, but the aspirate was serous, with an ascitic fluid cell count of 900 cells/mm^3 and 90% polymorphs. Bacterial culture was sterile. He gradually worsened over the next 4 days and was intubated for respiratory distress. His chest radiograph, thus far normal, showed pneumoperitoneum on the eighth day of admission. An emergency laparotomy was performed; 3½ l of feculent peritoneal fluid was drained and a 1×1 cm perforation was identified at the lateral aspect of the junction of the cecum and ascending colon, with an inflammatory mass in the cecum. Limited ileocolic resection was performed and an ileostomy was fashioned. He was negative for retroviral serology. He recovered uneventfully and was discharged on the 12th postoperative day; elective stoma closure was performed after 6 weeks. Histopathology was descriptive.

Discussion

Acute gastroenteritis and food poisoning are suspected when two or more family members present with vomiting, diarrhea, and abdominal pain. Acute gastroenteritis commonly occurs because of viral, bacterial, and protozoan organisms. Acute gastroenteritis runs a fulminant course in the immunocompromised patients and causes significant morbidity and mortality. Perforation of the healthy cecum is very rare. The common causes of spontaneous cecal perforation include trauma, malignant obstruction, ingested foreign bodies, volvulus, and inflammatory conditions such as Crohn's disease and infections [1,2]. The common infectious agents are *Salmonella typhi* and *Mycobacterium tuberculosis*. Intestinal perforation due to or in association with fulminant gastroenteritis is quite uncommon. Management of acute fulminant gastroenteritis involves intensive fluid management and administration of broad-spectrum antibiotics. Development of peritoneal signs or sepsis should prompt a diagnosis of intestinal perforation.

Colon perforation has been reported as a common surgical emergency in childhood [3]. Beyond the neonatal period in which colon perforation is associated with neonatal necrotizing enterocolitis and congenital bowel anomalies [4–7], nontraumatic colon perforations have not been reported in as much detail as traumatic colon perforations [3]. The most common presenting symptoms of nontraumatic colon perforations are nonspecific, including fever and diarrhea.

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Furthermore, frequent occurrence of diarrhea has been often misinterpreted as gastroenteritis, and this has made early diagnosis a challenge, especially in children [3]. Chang *et al.* [3] reported a mean lag of 6.19 days between the onset of symptoms and the diagnosis of colon perforation in their series, which highlights the need for close and repeated evaluation when fever and diarrhea persist beyond 5 days in pediatric population. Abdominal distention, the most common sign, is possibly due to free air leak into the abdominal cavity or paralytic ileus [8].

Children older than 5 years have higher total body fluid content compared with infants and young children [9]. They can tolerate dehydration better than children younger than 5 years, and this often leads to a delay in diagnosis and appropriate surgical treatment. Inadequate early hydration or dehydration has been identified as a risk factor associated with nontyphoid Salmonella intestinal perforation or spontaneous bowel perforations in children [10,11]. In addition, although pneumoperitoneum is invaluable in the diagnosis of colon perforation, it is not specific and surgery should not be delayed because of radiologic absence of pneumoperitoneum. Furthermore, ultrasound is of limited value in the diagnosis, probably because of the interference of air in the peritoneal cavity [12–14]. Ascitic fluid culture has revealed that broad-spectrum antibiotics are essential in these patients [3]. Options for surgical treatment in cecal perforation include cecostomy and limited ileocolic resection with anastomosis or stoma [1]. This case signifies the importance of detecting bowel perforation following fulminant gastroenteritis, which worsens over the period of time.

Conclusion

Cecal perforation following fulminant gastroenteritis in children is rare and it occurs because of severe dehydration and ensuing ischemic bowel. Spontaneous cecal perforation should be considered as a complication in older child presenting with unrelenting fulminant gastroenteritis and acute onset abdominal distension, and its early diagnosis can be lifesaving.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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