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## Enema-Induced Colonic Perforation in a Psychiatric Patient being treated with Antipsychotic Drugs and Hemodialysis for Renal Failure. A Case Report

Saneo Kinjo<sup>1)</sup>, Shungo Hiroyasu<sup>1)</sup>, Hironori Samura<sup>1)</sup>, Masayuki Shiraishi<sup>1)</sup>  
Yoshihiro Muto<sup>1)</sup> and Ken Nomura<sup>2)</sup>

<sup>1)</sup> *The First Department of Surgery, Faculty of Medicine, University of the Ryukyus, and*  
<sup>2)</sup> *Kitagami Chuo Hospital, Okinawa, Japan*

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### ABSTRACT

A 44-year-old male psychiatric patient (suffering from schizophrenia) with renal failure was referred to the University Hospital because of a massive rectal bleeding. A few days after undergoing retrograde irrigation enemas performed by the health care staff, the patient developed rectal bleeding. In his past medical history, the patient had been diagnosed to have schizophrenia at 14 years of age and renal failure (etiology unknown) requiring hemodialysis at 34 years of age. Colonoscopy revealed a large perforation occupying half of the luminal circumference of the sigmoid colon. Immediately after performing blood transfusion and hemodialysis, the patient underwent Hartman's procedure. The resected sigmoid colon revealed a large, longitudinal perforation measuring 4 cm in length on the mucosal surface and a ruptured configuration on the serosal surface. There were no diverticuli either at the site of or in the vicinity of the perforation. The perforated lesion showed mild inflammatory changes, a normal-appearing mucosa and tearing of the muscle fibers in the margins of the perforation. The patient recovered without any postoperative complications. *Ryukyu Med. J., 20(2)89~92, 2001*

Key words: chronic constipation, retrograde irrigation enema, colonic perforation, psychiatric patient, hemodialysis for renal failure

### INTRODUCTION

The frequently reported adverse effects of antipsychotic drugs in the treatment of patients with schizophrenia such as chronic constipation<sup>1,4)</sup> and abdominal pain have always been a major concern for general clinicians. Enemas are commonly used in the treatment of chronic constipation, especially in elderly, bedridden and psychiatric patients<sup>5, 6)</sup>. The habitual use of laxatives also increases with age and the use of retrograde irrigation enemas in long-term cases is also increasing. As a result of the common use of rectal tubes or similar devices for retrograde irrigation enemas, a perforation of the sigmoid colon and rectum can occur<sup>7)</sup>, but the incidence of enema-induced colonic perforations is rare<sup>8)</sup>.

To our knowledge, a perforation of the sigmoid colon caused by cleansing enemas used by chronically constipated patients has up to now only rarely been described. We herein describe a case of an enema-induced perforation of the sigmoid colon in a chronically constipated schizophrenia patient who was also undergoing hemodialysis for renal failure.

### CASE REPORT

A 44-year-old male psychiatric patient (suffering from schizophrenia) was referred to Ryukyu University Hospital because of a massive rectal bleeding on May 24, 2000. The patient presented with abdominal pain due to chronic constipation. A laxative enema and an irrigation enema through a rectal tube had been performed by the health care staff. Thereafter, he developed rectal bleeding, and immediately was referred to our hospital for further examination and treatment. His past medical history revealed that the patient had been diagnosed to have schizophrenia at 14 years of age and renal failure (etiology unknown) was later identified at 34 years of age. The patient had been treated with anti-psychotic drug [Dogmatil (sulpiride) 600 mg, Lodopin (zotepine 75 mg and Artane (trihexyphenidyl HCl) 6 mg], and hemodialysis for renal failure every other day. On admission, the patient appeared to be apathetic and anemic. A physical examination revealed the abdomen to be moderately distended and tenderness and muscular guarding were noted over the lower abdomen. No palpable mass was observed in the abdomen. A rectal examination showed a bloodstain on the doctor's

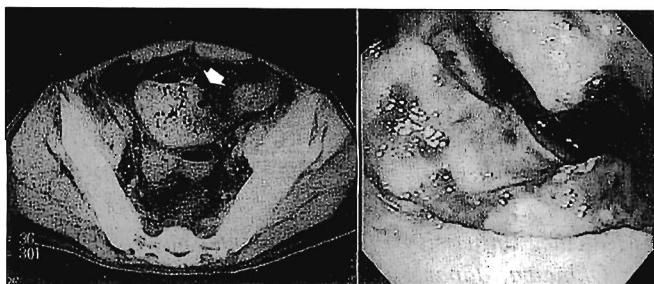


Fig. 1 An abdominal CT scan demonstrating a small mass-like lesion and the probable presence of entrapped air (arrow) in the lower abdominal cavity (left) and colonoscopy showing a linear perforation with oozing (right).

glove, but no lesion could be identified in the rectum. The blood pressure was 160 mmHg systolic and 100mm Hg diastolic. The pulse rate was 120/minute and regular. Routine laboratory findings revealed the Hgb to be 6.3 mg/dl, Hct 18.2%, total protein 4.8 g/dl, albumin 2.2 g/dl, BUN 32 mg/dl and creatinine 7.5 mg/dl.

Plain radiographs and an abdominal CT scan revealed neither any definite free air nor a mass lesion. Colonoscopy revealed a large perforation with oozing occupying about half of the luminal circumference of the sigmoid colon (Fig. 1). Immediately after the patient became stable following a blood transfusion of 4 units and hemodialysis for renal failure, the patient underwent an exploratory laparotomy. A large perforation covered with the omental tissue was observed at the anterior wall of the sigmoid colon with no evidence of gross fecal contamination. The patient was treated by a resection of the perforated segment, a colostomy with the proximal sigmoid colon, and a closure of the rectal stump by a linear stapling device (Hartmann's procedure).

Grossly, the resected colon showed a large perforation measuring  $4 \times 4$  cm in size at the anterior wall of the sigmoid colon with no evidence of diverticuli. A mucosal prolapse was noted from the margin of the perforation. No fecalomas, fecal contamination, ischemic necrosis of the margins of the perforation or abscess were observed (Fig. 2). Histologically, the perforated lesion revealed mild acute inflammatory changes, an almost normal-appearing mucosa and tearing of the muscle fibers in the margins of the perforation. No ischemic necrosis of the colonic wall, diverticuli or amyloid deposits in the muscle layers and blood vessels were identified (Fig. 3). Accordingly, the gross findings at surgery and the histologic examination of the specimen ruled out any other cause of perforation, such as either cancer, diverticuli at the perforation site or ischemia. In this case the observed tearing of the muscle fibers in the muscle layers also exclusively supported an enema-induced perforation. A history of repeated use of retrograde irrigation enemas was also confirmed by the health care staff. The patient recovered with no post-operative complications and was discharged after 4 weeks

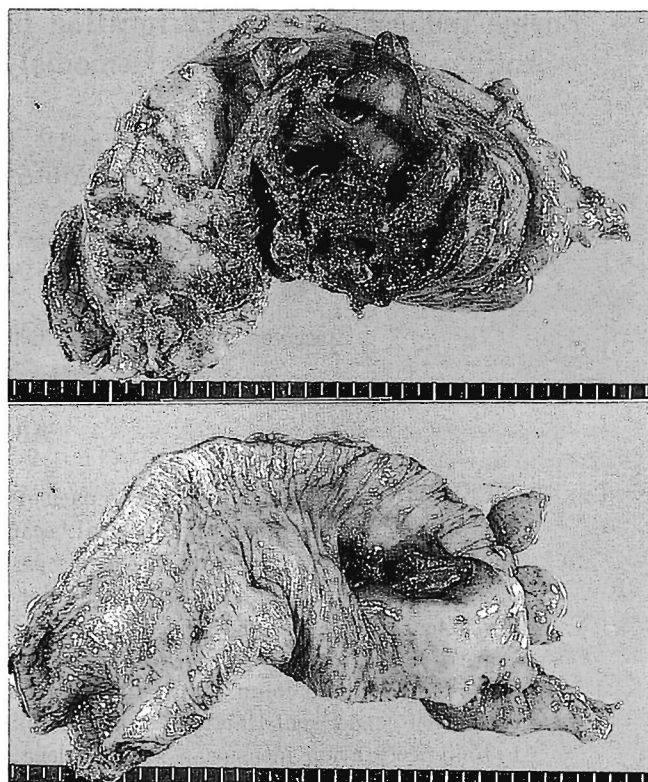


Fig. 2 Macrophotographs of the resected sigmoid colon showing a rather ruptured configuration on the serosal surface (top) and a linear perforation on the mucosal surface (bottom).

of hospitalization.

## DISCUSSION

Perforations of the colon and rectum have been well described in the literature as complications of colonoscopy and barium enemas<sup>7)</sup>, but they only rarely show serious complications. The reported incidence of colorectal perforation ranges from 0.1% to 0.9% and 0.01% to 0.04% following colonoscopy and barium enemas, respectively<sup>9-12)</sup>. Nevertheless, the true incidence of retrograde irrigation enemas-induced perforation of the colon and rectum is unknown<sup>7)</sup>. To our knowledge, no case of enema-induced-colonic perforation in a chronically constipated, psychiatric patient undergoing hemodialysis treatment for renal failure every other day has previously been reported.

In comparison to such iatrogenic colonic perforations mentioned above, non-iatrogenic or spontaneous colonic perforations are classified as either "stercoral" or "idiopathic" perforations based on the etiopathogenetical causes of the lesions<sup>13)</sup>. Anatomopathologically, stercoral and idiopathic perforations present different characteristics. Grossly, stercoral perforations originate from an ulcerative lesion often situated on the sigmoid colon or rectum. The histological characteristics are represented by the superficial ischemic necrosis of the mucosa (caused by fecalomas)

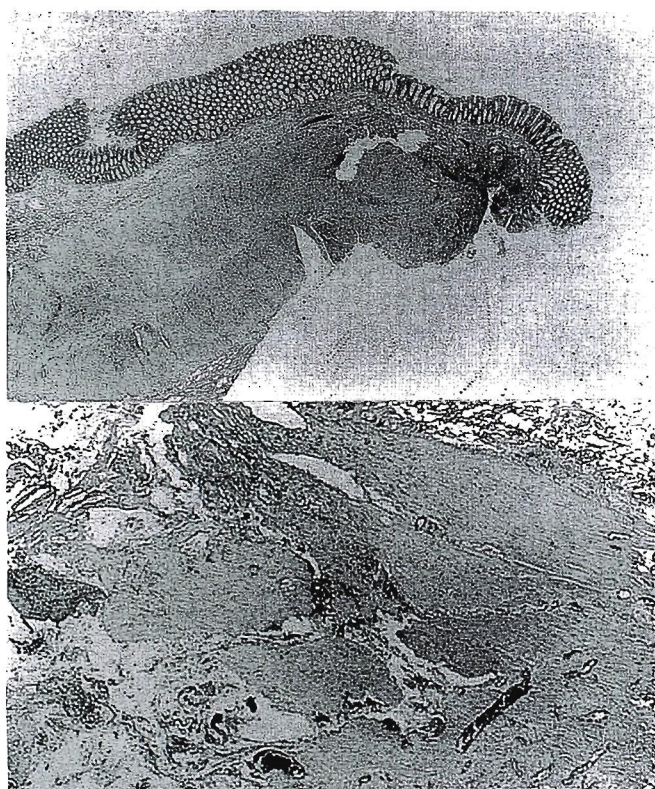


Fig. 3 Microphotographs of the perforated lesion revealing a normal-appearing mucosa and mild inflammation (top right; HE,  $\times 10$ ), and a tearing of the muscle fibers (top right; HE,  $\times 25$ ).

followed by an extension to the submucosa and muscle layers of the colonic wall. On the other hand, idiopathic perforations, which are frequently located in the sigmoid colon, are linear lacerations on the anti-mesenteric side of the colon without any pathologic modification of the colon. Morphologically, the colonic perforation in our case did not reveal either any ischemic necrosis of the colonic wall or a linear laceration on the antimesenteric side of the colon. Therefore, the lesion of the colonic perforation in our case was comparable to that of an iatrogenic colonic perforation. As aforementioned, the perforated lesion showed characteristic tears of the muscle fibers, thus indicating either a rectal tube tip injury or excessive intracolonic pressure during a retrograde irrigation enema.

The clinical presentation of patients with a colonic perforation varies and depends on the size, site and mechanism of perforation, the underlying pathology, the degree of peritoneal contamination, and the condition of the patient. Our patient presented with abdominal pain a few days after undergoing retrograde irrigation enemas and developed rectal bleeding prior to this admission. Meanwhile, plain radiographs did not demonstrate any free air in the abdominal cavity, but an abdominal CT scan did show localized air in the pelvic cavity which was confirmed to be covered with omental tissue at surgery. Plain radiographs and CT scan usually demonstrate free air, but

if free air can not be confirmed by both examinations, then colonoscopy may be useful for determining the presence of a perforation of the colon.

Our patient underwent Hartmann's procedure. The decision to perform surgery has been based on the immediate recognition of the injury and also the clinical symptoms and signs of peritonitis. There are three types of surgical procedures (primary repair, resection and primary anastomosis, Hartmann's procedure) depending on the degree of perforation and gross fecal contamination<sup>7)</sup>. A primary repair has been advocated for a traumatic perforation of the colon and rectum without any gross contamination. Hartmann's procedure should be performed for patients with much more extensive colonic damage and/or severe contamination. Our patient underwent Hartmann's procedure because of an extensive colonic perforation and a delayed presentation. It is generally accepted that the complications related to the operative treatment of patients with colonic perforation closely correlated to the length of the surgery as well as to the surgical techniques used<sup>8)</sup>.

In conclusion, an awareness of the possibility of inducing injury should be stressed to the medical staff of all institutions for chronically constipated patients using colonic irrigation. As a result, an early diagnosis and timely surgical treatment should result in a good prognosis, regardless of the patient's age and previous medical conditions.

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