

[Case Report]

A case of postoperative strangulating obstruction of the sigmoid colon

Yasunori Akutsu^{1,2)}, Hisahiro Matsubara²⁾, Masato Endo¹⁾, Toshihiko Hoshino¹⁾
Yushin Yoshinaga¹⁾, Yoshihito Ota^{1,2)}, Yozo Tsunoda¹⁾, Yukimasa Miyazawa²⁾
Tetsuro Urashima²⁾, Taichi Kawashima²⁾ and Takenori Ochiai²⁾

(Received June 14, 2004, Accepted July 21, 2004)

SUMMARY

We present a case of strangulating obstruction of the sigmoid colon. A 40-year-old female was admitted to our hospital with abdominal pain. Plain radiograph of the abdomen showed distended closed colon loops, and enhanced CT demonstrated a distinctive double-dilated loop of sigmoid colon without torsion. Upon laparotomy, we observed an adherent band coursing from the mesentery of the sigmoid colon to the scar at the fundus of the uterus where the enucleation of myoma uteri had been performed. Strangulating obstruction occurs often in small intestine. However, that of the large intestine, especially that of sigmoid colon is extraordinary and difficult to be distinguished from sigmoid colon volvulus which has similar clinical features. Strangulating obstruction of the sigmoid colon causes ischemia, and therefore early diagnosis and laparotomy are required. This quite uncommon disease has not been reported previously, and our case will be the first report. We discuss the clinical features of this rare disease with reference to the literature.

Key words: strangulating-obstruction, sigmoid colon, ileus

I. Introduction

Strangulating obstruction is one of the common causes of acute abdominal pain and most of it occur in the small intestine. We experienced a rare case of strangulating obstruction of the sigmoid colon (SOSC) caused by a postop-

erative adherent band. In this disease, like in strangulating obstruction of the small intestine, emergency operation to release the band is the only way to avoid necrosis of the colon. So, early diagnosis is required. However, SOSC is quite infrequent condition and it is very difficult to be distinguished from sigmoid colon volvulus

¹⁾Department of Surgery, Kumagaya General Hospital, Kumagaya, 360-0013.

²⁾Department of Academic Surgery, Graduate School of Medicine, Chiba University, Chiba 260-8670.

^{1,2)}阿久津泰典, ²⁾松原久裕, ¹⁾遠藤正人, ¹⁾星野敏彦, ¹⁾吉永有信, ^{1,2)}太田義人, ¹⁾角田洋三, ²⁾宮澤幸正, ²⁾浦島哲郎,

²⁾川島太一, ²⁾落合武徳: S状結腸絞扼性イレウスの1例.

¹⁾埼玉県厚生連熊谷総合病院外科.

²⁾千葉大学大学院医学研究院先端応用外科学.

Tel. 043-226-2110. E-mail:yakutsu@restaff.chiba-u.jp.

2004年6月14日受付, 2004年7月21日受理.

(SCV) which has similar clinical features on preoperative examinations.

Few cases of colonic strangulation were reported, though, all of these were due to internal herniation[1-4]. SOSC like our case has not been reported previously. We describe a case of this rare disease, and discuss with reference to the literature.

II. Case report

A 40-year-old female was admitted to our hospital with a complaint of left lower abdominal pain that occurred suddenly in the morning of 12 June, 2003. Her medical history included 2 lower abdominal operations, one on the myoma uteri at the age of 38, and a cesarean section for her first baby at the age of 40 (2 months before this admission). At the time of arrival, 2 hours after the onset, her body temperature was 36.9°C, blood pressure was 124/66mmHg and pulse rate was 73 beats/minute, respectively. There was no pallor or jaundice on her conjunctiva. Her abdomen was entirely soft, though there was severe tenderness and rebound tenderness on her left lower abdomen. The bowel sound was found to be decreased and a metallic sound was not observed, stethoscopically. We did not identify a palpable mass. A hematology profile was almost normal upon admission. There was no increase in the white blood cell count of 5,500/mm³ and the C-reactive protein value was 0.0mg/dl. The results of liver and renal function tests were within normal limits.

Plain radiograph of the abdomen showed a distended closed loop of the colon without an air-fluid level. This finding is similar to SCV (Fig. 1). Abdominal computed tomography (CT) scan revealed a double-dilated closed loop of sigmoid colon in her left lower abdomen with a little ascites around the Douglas' pouch (Fig. 2). This finding was also implying SCV, but torsion of the sigmoid colon could not be identified



Fig. 1 A plain radiograph of the abdomen showing the "coffee-bean"-like distended closed loop of the colon. But its diameter and size are smaller than that of sigmoid colon volvulus.

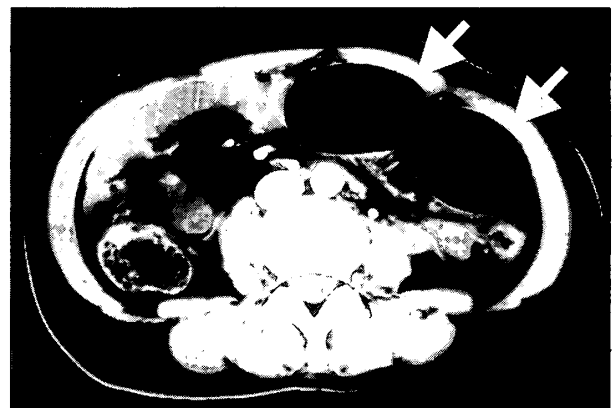


Fig. 2 Contrast enhanced CT showing the double-dilated sigmoid colon (arrows).

on CT (Fig. 3). After the admission, the white blood cell count increased up to 9,800/mm³ and abdominal pain worsened. Therefore, an emergency operation was performed, although the final diagnosis was not established.

Upon laparotomy, a closed loop of strangulated and slight ischemic sigmoid colon, 60cm in length, was found with bloody peritoneal fluid

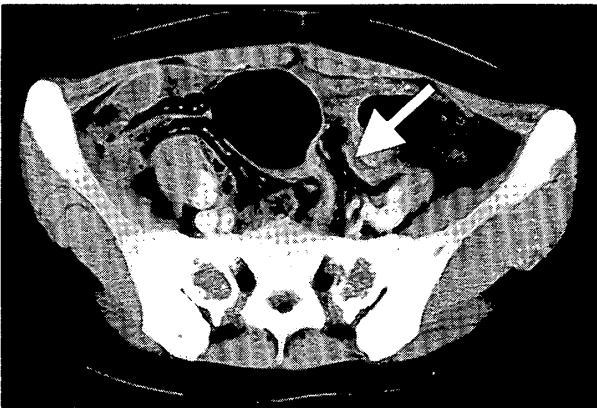


Fig. 3 There is not critical point of torsion of the sigmoid colon observed on contrast enhanced CT. The axis of the mesentery of the sigmoid colon is not twisted (arrows).



Fig. 4 Intraoperative photograph. The distended sigmoid colon strangulated by an adhesive band is noted.

(Fig. 4). We observed an adherent band coursed from the mesentery of the sigmoid colon to the scar at the fundus of the uterus where the enucleation of myoma uteri had been performed two years before the manifestation of the present illness. Torsion of the mesentery of the sigmoid colon was not seen as preoperatively diagnosed. This band was cut and the strangulated sigmoid colon was released without resection. Her postoperative course was uneventful, and she remained in good health 6 months after the surgery.

III. Discussion

Strangulating obstruction of the colon is very rare, and especially SOSC has not been reported as yet. At first glance, SOSC looks like SCV and these two diseases have similar preoperative findings. Though, the appropriate treatment of these diseases is different. SCV does not always need an emergency operation because the incidence of bowel necrosis in this disease is only 12.5%[5]. Consequently, nonoperative treatments, such as endoscopic decompression of the dilated colon, insertion of a flatus tube, or a high enema could be selected initially [6]. Contrary, SOSC causes ischemia, therefore, nonoperative treatments are ineffectual as with other forms of mechanical ileus. Needless to say, the emergency operation to release this band is a fundamental treatment to avoid bowel necrosis. So, a differential diagnosis is necessary, but is very difficult. Barium enema is an appropriate investigation for the diagnosis of SCV; the bird-beak sign on this examination is a classic and typical finding of SCV. However, as in our case, patients of acute abdominal disease often have so severe abdominal pain that barium enema is not always easy to be performed.

To distinguish SOSC and SCV, CT is useful and should be performed instantly. CT has now assumed a pivotal role in the diagnosis of bowel obstruction and is simple to be performed and can confirm the presence of obstruction and shows the cause[7-9]. Catalano reported that CT is applicable to diagnose SCV because it can identify the torsion of a sigmoid loop around the mesocolon and vessels[9]. In our case, the distinctive finding of the small double-dilated closed loop of the sigmoid colon was clearly demonstrated on plain and enhanced CT. This finding did not accompany the "whirl sign" which indicates a twist of the mesentery of the sigmoid colon seen in SCV[10]. This distinctive finding can differentiate SOSC clearly

from SCV.

Abdominal plain radiograph is also useful. As seen in SCV, an inverted U-shaped formation with absence of haustra, a “coffee-bean sig[11]”-like appearance on abdominal X-ray, was observed in our case of SOSC. However, the diameter and the whole size of the dilated sigmoid colon were much smaller than that of SCV. In other words, most cases of SCV present a huge dilated colonic air spreading throughout the whole abdominal cavity, though, SOSC presents a small dilated colonic air within the left lower abdomen. The reason for this difference is because SOSC is not accompanied with megacolon. In other words, the diameter of the colon is within the normal limit in SOSC.

Findings of ischemia are also helpful to diagnose SOSC. Makita et al reported that mesenteric attenuation, radial distribution, and ascites depicted on CT are signs of small bowel necrosis in patients with a closed loop[12]. These signs on CT could be found in our case, and will be also applicable to ischemia of the large bowel. Another method to identify the existence of the necrosis is reported by Bryk who reported that reduced activity on 5 successive minutes of abdominal films are useful to distinguish the strangulating obstruction from the simple obstruction [13].

In conclusion, when patients who underwent lower abdominal surgery are suspected of having sigmoid colon obstruction, SOSC should be included in the differential diagnosis even though this entity is very uncommon, and should be rapidly diagnosed. By combining the aforementioned findings, the presence of strangulation and of ischemia may be predicted preoperatively and we should not lose the appropriate opportunity of laparotomy.

要 旨

今回我々はS状結腸絞扼性イレウスの1例を経験したので報告する。症例は40歳の女性。腹痛を主訴に当

院に緊急入院となった。腹部レントゲンで拡張した大腸ループ像を認めた。造影CTでは捻れ像をともしない二重に拡張したS状結腸を認めた。開腹手術にて子宮とS状結腸との間の癒着性のヒモに起因するS状結腸絞扼性イレウスの診断となった。S状結腸に発生する絞扼性イレウスはS状結腸軸捻症との臨床像が類似していることから診断が非常に困難である。しかし虚血を引き起こす病態であり、早期診断と早期開腹手術が必要であると思われる。本疾患の報告はこれまでになく自験例が1例目であったので、文献的考察を加え報告する。

References

- 1) Tagore NK, Grover NK, Gulati SM, Taneja OP. Transmesenteric herniation of the cecum and right colon causing strangulation of the sigmoid colon. *Int Surg* 1974; 59: 53-4.
- 2) Hay D. Strangulation of colon in an acquired diaphragmatic hernia. *Cent Afr J Med* 1975; 21: 265-6.
- 3) Garvin PJ, Codd JE. Colonic obstruction and strangulation in traumatic diaphragmatic hernia. Case report. *Mo Med* 1977; 74: 599-601.
- 4) Pritchard GA, Price-Thomas JM. Internal hernia of the transverse colon. A new syndrome. *Dis Colon Rectum* 1986; 29: 657-8.
- 5) Ryan P. Sigmoid volvulus with and without megacolon. *Dis Colon Rectum* 1982; 25: 673-9.
- 6) Kudaka M, Kudaka H, Tomiyama T, Yogi M, Inafuku Y, Kawawno K, Yamashiro K, Ooshiro K, Teruya T, Taira K, Higa T, Sunagawa H. Surgical treatment of a sigmoid volvulus associated with megacolon: report of a case. *Surg Today* 2000; 30: 1115-7.
- 7) Shaff MI, Himmelfarb E, Sacks GA, Burks DD, Kulkarni MV. The whirl sign: a CT finding in volvulus of the large intestine. *J Comput Assist Tomogr* 1985; 9: 410.
- 8) Balthazar EJ, Birnbaum BA, Megibow AJ, Gordon RB, Whelan CA, Hulnick DH. Closed-loop and strangulating intestinal obstruction: CT signs. *Radiology* 1992; 185: 769-5.
- 9) Catalano O. Computed tomographic appearance of sigmoid volvulus. *Abdom imaging* 1996; 21: 314-7.
- 10) Fisher JK. Computed tomographic diagnosis of volvulus in intestinal malrotation. *Radiology* 1981; 140: 145-6.
- 11) Young WS, Engelbrecht HE, Stoker A. Plain film analysis in sigmoid volvulus. *Clin Radiol* 1978; 29: 533-60.
- 12) Makita O, Ikushima I, Matsumoto K, Arikawa Y, Yamashita Y, Takahashi M. CT differentiation between necrotic and nonnecrotic small bowel in closed loop and strangulating obstruction. *Abdom imaging* 1999; 24: 120-4.
- 13) Bryk D. Strangulating obstruction of the bowel: a reevaluation of radiographic criteria. *AJR Am J Roentgenol* 1978; 130: 835-43.