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Transverse colon volvulus: A case report and a literature review

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ABSTRACT

A 42-year-old man, who had been bedridden for a long time due to cerebral palsy from birth, was admitted to our department for abdominal pain and vomiting. He was diagnosed as having intestinal obstruction because plain abdominal radiography and abdominal computed tomography revealed marked dilatation of the ascending and transverse colon. On the 3rd day after admission, an emergency laparotomy was performed subsequent to the diagnosis of strangulated ileus secondary to colon obstruction. During the operation, the transverse colon was found to be twisted 180 degrees counterclockwise and necrotic. It was resected and a double-barrelled colostomy was made. In comparison with sigmoid colon volvulus, transverse colon volvulus is a very rare disease and is difficult to diagnose preoperatively. In treating patients with abdominal symptoms similar to that of our patient, it would be good to always bear the possibility of transverse colon volvulus in mind. *Ryukyu Med. J., 22(1,2) 63~66, 2003*

Key words: transverse colon volvulus, colon obstruction, cerebral palsy

INTRODUCTION

In comparison with sigmoid colon volvulus, transverse colon volvulus (TCV) is very rare and difficult to diagnose preoperatively. Herein, we report a case of TCV, which required an emergency laparotomy for strangulated ileus, and a literature review of similar cases.

CASE REPORT

A 42-year-old man was admitted to our hospital with a four days history of intermittent abdominal pain and vomiting. He had been bedridden due to cerebral palsy since birth and suffered from severe constipation. Five years before that, he experienced the similar symptoms and improved with conservative therapy. The diagnosis at that time was enterocolitis.

Physical examination showed a soft and flat abdomen with slight tenderness in the left lower

quadrant. Bowel sounds were hypoactive and abdominal mass was not palpable. Plain abdominal radiography (Fig. 1) showed grossly gaseous distended ascending and transverse colon. An abdominal computer tomography [CT] (Fig. 2) revealed marked gaseous dilatation of the colon without any evidence of intraabdominal free air and ascites. There was a slight increase in white blood cells [WBC] count ($10.500/\text{mm}^3$), however other laboratory data indicated no abnormalities. Three days after admission, it was noted that in spite of intensive and conservative treatment, his general condition (e. g., abdominal pain, vomiting and pyrexia) has gradually deteriorated and laboratory data showed severe elevation in the value of WBC and CRP ($20.500/\text{mm}^3$, 7.67mg/dl). An emergency laparotomy was performed following a diagnosis of strangulated ileus secondary to colon obstruction. During the operation, hemorrhagic ascites was recognized for about 100ml. The enlarged transverse colon was found to be twisted 180 degrees counter-



Fig. 1 Plain abdominal radiography showing grossly colonic gaseous distension.



Fig. 2 Abdominal computed tomography showing marked gaseous dilatation of the colon.



Fig. 3 Intraoperative photograph showing an enlarged and twisted 180 counterclockwise transverse colon (arrow).

clockwise (Fig. 3) and we diagnosed this case as TCV.

A poor fixation of ascending colon was also recognized, however, the fixation and the diameter of left side colon were thought to be within normal limits. After detorsion, the affected colon was carefully inspected and incarcerated necrotic segment of the transverse colon was resected approximate 30 cm in length. A double-barrelled colostomy was created in fear of an anastomotic leakage due to poor colonic circulation and contamination from operation. Subsequent histopathological examination demonstrated no abnormalities in the lesions. Although he developed pseudo-membranous enterocolitis on the 7th day after the operation, this was successfully treated by oral administration of Vancomycin hydrochloride for two weeks, then he was discharged. Fifty three days after the operation, there has been no sequelae.

DISCUSSION

Transverse colon volvulus (TCV) was first reported by Kallio in 1932¹⁾. TCV is a very rare condition, and accounts for approximately 4^{1,2)} to 9 %³⁾ of colonic volvulus and 1 to 5% for large bowel obstructions⁴⁻⁶⁾. The mortality rate of TCV is reported to be 33%²⁾ and volvulus of other sites of the colon to be 8%²⁾. As compared to sigmoid colon volvulus⁷⁾, to date, about forty cases of TCV has been reported in Japan and a large number of that developed in young people. Yamanari⁷⁾ reported that the 39% of patients with TCV had concomitant

diseases such as cerebral palsy or mental retardation, and that the majority of these patients, whose bowel motility was insufficient, had chronic constipation.

The common clinical symptoms of TCV are abdominal pain, vomiting^{7,8)} and constipation⁸⁾. Physical examination usually reveals a markedly distended abdomen, a palpable mass and tenderness especially in children⁹⁾.

Congenital, physiological and mechanical predisposing factors for the development of TCV are proposed by Zinkin¹⁰⁾. Errors in rotation or fixation of colon and narrowing of the roots of mesentery at the site of hepatic and splenic flexure are thought to be congenital factors⁵⁾. As physiological factors, chronic constipation, congenital colonic aganglionosis, mental retardation, pregnancy, aging, ileus, scleroderma and medication are considered⁵⁾. Intraabdominal adhesions, postoperative malpositioning of the colon and submucosal tumors of the colon are thought to be mechanical factors⁵⁾. In our case, mental retardation due to cerebral palsy, chronic constipation and errors in fixation of the colon that were observed during the operation are thought to have played an important role in the development of the TCV.

There are two clinical forms of TCV. The acute and subacute forms^{6,8,11)}. The acute form begins with a sudden onset of severe abdominal pain with vomiting, a marked abdominal distention and tenderness, a palpable mass, followed by a status of shock. Laboratory investigation usually shows severe inflammatory changes such as leukocytosis and a high value of CRP⁸⁾. The rapid deterioration is considered to be result of on-going ischemic change in the affected colon secondary to bowel and vascular obstruction⁶⁾. The clinical picture of the subacute form is characterized by a gradual onset and intermittent abdominal symptoms (e.g., abdominal pain, distension, tenderness)^{6,8)}. Past history often reveals similar episodes in the subacute form. Our case was thought to be basically a subacute form with acute progression, which is usually improved by conservative treatment.

A routine abdominal plain film is occasionally helpful for the diagnosis of TCV. The marked distention of the proximal colon with an empty distal bowel and two air-fluid levels in the supine or lateral decubital projection caused by a 'double closed loop obstruction' are diagnostic findings for TCV⁴⁾. However, it is often difficult to differentiate which sites

of the colon are dilated on the plain film^{8,12)}. A contrast enema (barium or gastrografin) is a definitive method for the diagnosis of TCV. It usually demonstrates "bird's beak" deformity at the point of torsion^{8,12)}. Gastrografin enema however is preferred to barium enema due to the possible risk of colonic perforation.

In our case, the plain abdominal film showed a grossly distended ascending and transverse colon, and we suspected TCV or sigmoid colon volvulus. A contrast enema was not performed in our case because of the acute deterioration of the patient's condition which required emergency surgery.

There are two options for the treatments of TCV, operative and conservative managements. Thomas¹³⁾ reported a successful management of TCV using colonoscopy. He recommended this procedure for patients whose general condition is good. This procedure could help avoid emergency surgery by decompressing the colon, elective surgery may then follow safely^{13,14)}. Surgical interventions such as detorsion, colopexy and the resection of transverse colon with or without anastomosis are generally required and are considered appropriate procedures for TCV^{5,6,8,15)}. Detorsion alone has a high risk of recurrence and a high mortality rate as compared with colonic resection^{8,16)}. It is therefore generally recommended that resection of the transverse colon be done in all cases of TCV^{6,8,15)}. In our case, we performed only the resection of transverse colon and created a colostomy, although the fixation of the ascending colon was thought to be a risk factor. Strict follow-up would be needed for the early detection of any recurrence of the volvulus. In conclusion, we would like to say that TCV is a very rare disease and is difficult to diagnose preoperatively because of the lack of a specific clinical presentation as compared with volvulus of the sigmoid colon. We encountered a case of TCV with chronic constipation, mental retardation, and errors in fixation of colon. We performed resection of the transverse colon and had a good result. If this type of patient complains of abdominal symptoms, we should always keep the possibility of TCV in mind.

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