Midgut Volvulus Induced Extensive Bowel Infarction

Tai-Yu Huang · Hsing Chang · Kun-Chuan Chen ·
Sheng-Chuan Hu · Ming-Jen Tsai

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Abstract Midgut volvulus, mostly occurs due to congenital midgut malrotation, has been reported as a rare but lethal complication of some acquired medical conditions, such as postoperative adhesion bands, tumors, and mesenteric cysts. It is a surgical emergency to cause extensive bowel ischemia resulted from torsion of superior mesenteric artery. Early diagnosis and intervention is the only manner to prevent extended bowel necrosis. Here, we report a case of midgut volvulus with typical computed tomography features—the whirl sign, the transposition of the superior mesenteric artery and vein, and the ischemic change of bowel supplied by superior mesenteric artery. Early operation prevented the fate of extended bowel resection.

Keywords Midgut volvulus · Ischemic bowel disease · Whirl sign · Bowel infarction

A 52-year-old man, with postesophagectomy of esophageal cancer, presented to our emergency department with severe abdominal cramping pain for 2 h. The physical examinations revealed diffuse abdominal tenderness but no muscle rigidity. The laboratory works showed mild leukocytosis (WBC 11,000/ μ l) without left shift. A plain abdominal film revealed diffuse decrease of bowel gas. Contrast-enhanced

computed tomography for intractable abdominal pain and possible early surgical abdomen revealed diffuse loss of contrast enhancement and edematous change in small bowel (Fig. 1) but sparing of descending and sigmoid colons (Fig. 1, arrowhead). The superior mesenteric vein (SMV) (Fig. 1, black arrow) was observed over the left aspect of the superior mesenteric artery (SMA) (Fig. 1, white arrow), and a whirling pattern of bowel loop rotation encircling (Fig. 1) and compromising SMA (Fig. 2, arrow) were found. Emergency laparotomy revealed adhesion band over the previous feeding jejunostomy site which induced midgut volvulus. Fortunately, after releasing the adhesion and reduction of the volvulus, the blood flow of bowel was improved without gangrene formation. The patient was discharged uneventfully 12 days later and had been well after 1 year of follow-up.

Fig. 1 The contrast-enhanced abdominal computed tomography demonstrating a whirling pattern of bowel loop rotation encircling the SMA (the whirl sign), anatomical inversion of the SMA (white arrow) and SMV (black arrow), diffuse decreased enhancement of the small bowel, and normal enhancement of the descending colon (arrowhead)

T.-Y. Huang · H. Chang · K.-C. Chen · S.-C. Hu · M.-J. Tsai
Department of Emergency Medicine, Buddhist Tzu Chi General
Hospital,
707, Section 3, Chung Yang Road,
Hualien 970, Taiwan

M.-J. Tsai (✉)
Institute of Pharmacology and Toxicology, College of Medicine,
Tzu Chi University,
Hualien 970, Taiwan
e-mail: tshi33@gmail.com

Fig. 2 The reconstructive computed tomography revealing an interruption of the SMA blood flow (*arrow*) and diffuse loss of enhancement of the small bowel

Midgut volvulus, mostly occurs due to congenital midgut malrotation or persistent omphalomesenteric duct, has been reported as a rare but lethal complication of some acquired medical conditions, such as postoperative adhesion bands, tumors, and mesenteric cysts [1]. The typical computed tomography finding is the presence of a “whirl sign” and the position inversion in the anatomy of SMA and SMV [2]. It is a lethal situation resulting in extensive bowel necrosis due to compromising the blood flow of SMA when delayed intervention. Physicians must keep the life-threatening disease in mind when high-risk patients present with symptoms associated with ischemic bowel disease. Only early diagnosis followed with early surgical intervention can prevent the fate of extended bowel resection.

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