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Case Report

Usefulness of Laparoscopic Surgery for Acute Abdomen Resulting from Non-Occlusive Mesenteric Ischemia

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ABSTRACT

A 71-year-old female was admitted to the Department of Neurosurgery at our hospital in September 2013 because of multiple cerebral infarctions. She was referred to our department because of sudden onset of severe epigastric pain. Although computed tomography (CT) did not find free air in the abdominal cavity, portal vein gas was identified in the liver, and intestinal necrosis was strongly suspected. The superior mesenteric artery was not occluded, and no area of intestinal ischemia was identified by CT. She underwent emergency laparoscopic surgery for acute abdomen associated with high fever. Ischemic changes were found in approximately 10 cm of the colon at the hepatic flexure, and there were no ischemic changes found in other portions of the intestine. She received laparoscopic right hemicolectomy, and had an uneventful postoperative course. She was transferred to the Department of Neurosurgery 11 days after the surgery. Based on postoperative pathological examination, she was diagnosed as having non-occlusive mesenteric ischemia (NOMI) because no thrombus was found in the artery or vein of the mesentery in the resected specimen, and intestinal ischemia was located only in the hepatic flexure. Laparoscopic surgery was useful for accurate diagnosis of acute abdomen and provided an appropriate and minimally-invasive surgical treatment.

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Key words : non-occlusive mesenteric ischemia, laparoscopic surgery, portal vein gas

INTRODUCTION

Non-occlusive mesenteric ischemia (NOMI) represents 20-30% of all cases of acute mesenteric ischemia, which is characterized by mesenteric ischemia without occlusion of the mesenteric artery or vein in the area of bowel necrosis[1,2]. Because of nonspecific symptoms and frequent occurrence in patients with postoperative consciousness disturbances[3], early diagnosis of NOMI is difficult. We reported a patient who underwent laparoscopic surgery, which allowed accurate diagnosis of NOMI for acute abdomen and an appropriate, minimally-invasive treatment.

CASE PRESENTATION

A 71-year-old female was hospitalized in the Department of Neurosurgery at our hospital in September 2013 because of multiple cerebral infarctions. She had received

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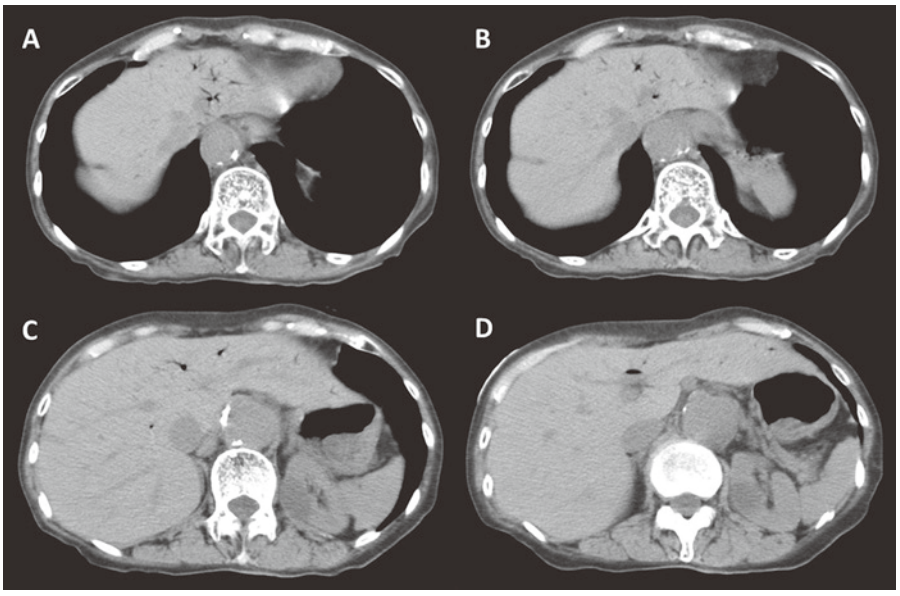

Fig. 1. Computed tomography (CT) showed portal vein gas in the liver, which strongly suspected intestinal necrosis.

Fig. 2. The superior mesenteric artery was not occluded by CT (white arrows).

digitalis for five years to treat heart disease. She was referred to our department because of sudden onset of severe epigastric pain three weeks after the admission. Although computed tomography (CT) did not find free air in her abdominal cavity, portal vein gas was identified in the liver, which strongly suggested intestinal necrosis (Fig. 1). The superior mesenteric artery was not occluded, and no intestinal ischemic lesion was identified by CT (Fig. 2). She underwent emergency laparoscopic surgery for acute abdomen associated with high fever. Intraoperatively, ischemic changes were found in approximately 10 cm of the colon at the hepatic flexure (Fig. 3). However, no ischemic changes were found in the other portions of the intestine. The patient underwent laparoscopic right hemicolectomy, and had an uneventful postoperative course. She was transferred to the Department of Neurosurgery 11 days after surgery. Pathologically, the diagnosis of NOMI was established because no thrombus was found in the mesenteric artery or vein, and intestinal ischemia was limited to the hepatic flexure (Fig. 4, 5).

Discussion

NOMI is an acute mesenteric circulatory disorder that does not involve the organic occlusion of blood vessels, for which the most common cause is decreased cardiac output that results in splanchnic hypo-perfusion. NOMI is seen in patients with myocardial infraction, congestive heart failure, aortic insufficiency and renal or hepatic diseases[1,4-6], and it accounts for 20-30% of acute bowel ischemia[1,2]. Early diagnosis of NOMI is difficult, and its mortality rate is 70-90%[7]. Angiographic study of the SMA is essential for the diagnosis of NOMI[8], and a useful scoring system for the assessment of angiographic findings in NOMI has also been reported[9]. However, this type of study is difficult to per-

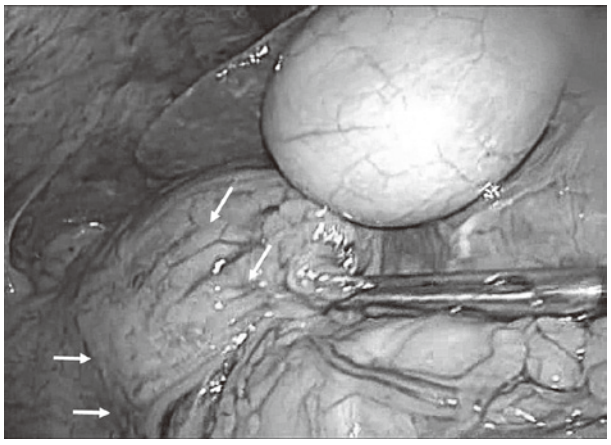

Fig. 3. Laparoscopy showed ischemic changes in the hepatic flexure of the colon (white arrows).

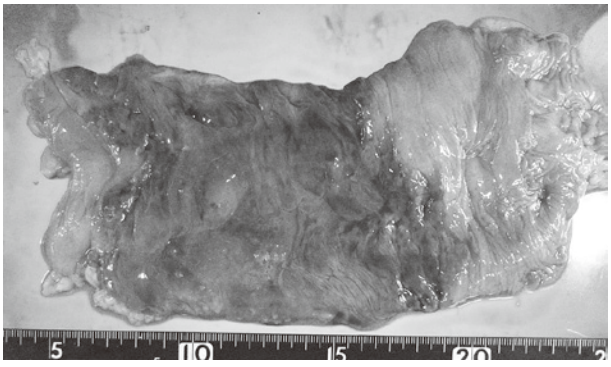

Fig. 4. Pathologically, ischemic changes were found segmentally in approximately 10 cm in the resected colon.

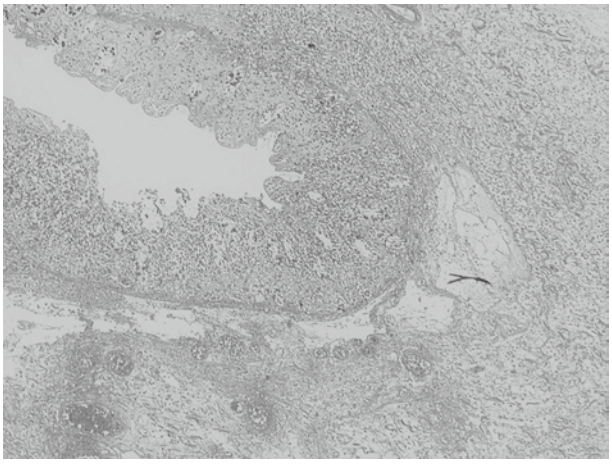

Fig. 5. A diagnosis of NOMI was established pathologically because no thrombus was found in the mesenteric artery or vein (H.E.×40).

form in patients who are in poor or unstable condition. In the current case, laparoscopic surgery was useful to obtain an accurate diagnosis of NOMI for acute abdomen, and to provide appropriate minimally-invasive treatment. Therefore, this approach may be useful in patients for whom the cause of acute abdomen cannot be made preoperatively.

NOMI is commonly caused by a decrease in cardiac output that results in splanchnic hypoperfusion. Reported causes of mesenteric vasospasm are myocardial infarction, congestive heart failure, renal or hepatic disease, digitalis, various forms of shock, septicemia, dehydration and hypotension following dialysis, and heart and major abdominal surgery[1,4-6]. In the current case, because the patient had received digitalis for five years to treat heart disease, the digitalis administrated for long term may have induced NOMI.

Authors have no conflicts of interest.

References

1. Trompeter M, Brazda T, Remy CT, Vestring T, Reimer P. Nonocclusive mesenteric ischemia : etiology, diagnosis, and interventional therapy. Eur Radiol. 2002 ; 12 : 1179-87.
2. Acosta S. Epidemiology of mesenteric vascular disease : clinical implications. Semin Vasc Surg. 2010 ; 23 : 4-8.
3. Mitsuyoshi A, Obama K, Shinkura N, Ito T, Zaima M. Survival in nonocclusive mesenteric ischemia : early diagnosis by multidetector row computed tomography and early treatment with continuous intravenous high-dose prostaglandin E(1). Ann Surg. 2007 ; 246 : 229-35.
4. Kniemeyer HW. Mesenteric infarct—when is the vascular surgeon needed ? Zentralbl Chir. 1998 ; 123 : 1411-7.
5. Bruch HP, Habscheid W, Schindler G, Schiedeck T. Nonocclusive ischemic enteropathy-diagnosis, differential diagnosis and therapy. Langenbecks Arch Chir Suppl II Verh Dtsch Ges Chir. 1990 : 317-21.
6. Hirner A, Haring R, Hofmeister M. Acute mesenteric vascular occlusions. Chirurg. 1987 ; 58 : 577-84.
7. Han SY, Kwon YJ, Shin JH, Pyo HJ, Kim AR. Nonocclusive mesenteric ischemia in a patient on maintenance hemodialysis. Korean J Intern Med. 2000 ; 15 : 81-4.
8. Boley SJ, Sprayregan S, Siegelman SS, Veith FJ. Initial results from an aggressive roentgenological and surgical approach to acute mesenteric ischemia. Surgery. 1977 ; 82 : 848-55.
9. Minko P, Groesdonk H, Stroeder J, Miodek J, Graeber S, Bücker A, et al. A scoring system for the assessment of angiographic findings in non-occlusive mesenteric ischemia (NOMI). Rofo. 2012 ; 184 : 805-9.