Hematogenous intestinal metastases from sigmoid colon cancer presenting as iliopsoas abscess and bowel obstruction

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Abstract

Intestinal metastases from colorectal cancer typically occur by intraperitoneal spread, whereas those occurring via hematogenous route are exceedingly rare. We report a case of intestinal metastases from sigmoid colon cancer that presented as iliopsoas abscess and ileus. A 78-year-old man who had undergone sigmoidectomy for sigmoid colon cancer 5 years ago was referred to our hospital with recurrent ileus and fever. Abdominal computed tomography showed a left iliopsoas abscess and a mass near the abscess that had ostensibly caused ileus. The patient underwent segmental resection of the jejunum including the mass. Histopathological examination of the resected specimen revealed moderately differentiated adenocarcinoma proliferating mainly in the submucosal and muscular layers, which was pathologically identical to the colon cancer resected 5 years ago. He died 18 months after the surgery because of liver metastases. This case report highlights the delayed occurrence of colorectal metastases at unusual sites, such as the small bowel, more than 5 years after the resection of the primary cancer. Intestinal metastases should be considered in patients with a history of colon cancer, particularly in those with recurrent ileus or abdominal abscess with no obvious cause.

Keywords Colorectal cancer · Intestinal metastasis · Iliopsoas abscess

Introduction

Small bowel neoplasms account for only 1–3% of all primary gastrointestinal tumors [1, 2]. Although secondary neoplasia has been reported to be more frequent than primary small-intestinal neoplasms, the incidence of metastatic tumors in the small bowel is relatively rare (2.8–8.2% in autopsy cases) [3]. Primary tumors in breast, lung, and melanoma metastasize to the small bowel by the hematogenous route. However, most metastases to the small bowel from colorectal cancer are by direct invasion or occur as disseminated metastasis associated with peritonitis carcinomatosa [4]. Here we report the case of a patient who developed intestinal metastases via the hematogenous route from sigmoid colon cancer and

presented with iliopsoas abscess and bowel obstruction more than 5 years after the initial surgery.

Case report

A 78-year-old man was referred to the emergency department with a history of loss of appetite accompanied by vomiting since 1 week. He had a medical history of cerebral infarction 15 years ago, and myocardial infarction 6 years ago. He underwent sigmoidectomy 5 years ago for T3 N1b M0 sigmoid colon cancer (TNM 8th edition) with moderate venous and lymphatic invasion (type 2, 40 × 45 mm, moderately differentiated adenocarcinoma according to the Japanese classification of colorectal carcinoma, Fig. 1a, b) [5]. He did not receive adjuvant chemotherapy after the operation. He received conservative treatment for ileus and left the hospital on day 12 of illness. He was referred to the emergency department with fever and loss of appetite 4 weeks later. No abnormal findings were observed except for mild tenderness in the left lower abdominal quadrant. At admission, his laboratory results, including carcinoembryonic antigen (CEA) and carbohydrate antigen 19-9 (CA19-9)

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Fig. 1 **a** Macroscopic appearance of the resected specimen of the sigmoid colon. **b** Histological findings of the sigmoid colon cancer resected 5 years ago (H&E staining, $\times 10$ magnification). **c** Macroscopic appearance of the resected specimen of the jejunum. Cir-

cumferential tumor with ulcer measuring $30 \times 40 \times 20$ mm, and dilated proximal jejunum alongside collapse of the distal jejunum is observed. **d** Histological finding of the jejunal tumor (H&E staining, $\times 10$ magnification)

were within the normal limits with the exception of white blood cell count (15,700/ μ L), C-reactive protein (11.9 mg/dL), serum albumin (2.6 g/dL), and hemoglobin (9.6 g/dL). No signs of distant metastases were observed on chest and abdominal computed tomography (CT). However, left iliopsoas abscess was detected on abdominal CT (Fig. 2a), and CT-guided percutaneous drainage was performed. No communication between the abscess and the intestine was observed by fistulography at the time of drainage tube withdrawal. The patient developed recurrent episodes of ileus after the reduction of iliopsoas abscess. Laparotomy was performed for treatment of recurrent ileus because the CT showed a mass causing bowel obstruction near the iliopsoas abscess with dilatation of the proximal jejunum (Fig. 2b, c). A tumor was found at the jejunum about 200 cm away from the Treitz ligament, with dense adhesions with the descending colon and the retroperitoneum; in addition, dilated proximal jejunum, and collapse of the distal jejunum and ileum were observed. The tumor was mobilized, and the jejunal segment resected followed by end-to-end small bowel stapled anastomosis. Macroscopic examination of the resected specimen revealed a circumferential tumor with ulcer measuring $30 \times 40 \times 20$ mm (Fig. 1c). Histopathological examination revealed moderately differentiated adenocarcinoma,

which were similar to those of sigmoid colon cancer resected 5 years ago (Fig. 1b, d). Furthermore, histopathological examination revealed adenocarcinoma proliferating mainly in the submucosa and muscular layer with invasion of the subserosa and regional lymph node metastasis (Fig. 3a, b). On the mucosal surface of the jejunal tumor, both cancerous and non-cancerous parts were observed (Fig. 3c, d). Moderate lymphangitic and venous invasion were observed according to the Japanese classification of colorectal carcinoma [5]. Based on these findings, the patient was diagnosed as having hematogenous metastasis to jejunum from sigmoid colon cancer. His postoperative course was uneventful. Adjuvant chemotherapy was not administered because of patient refusal. Abdominal CT showed liver metastases 3 months after the surgery. The patient did not receive any further treatment except for supportive care; he died 18 months after the surgery for jejunal metastasis.

Discussion

Colorectal cancer (CRC) is the third leading cause of cancer-related deaths in Japan and this rate has shown an increasing trend of late. Almost 58% of patients have stage

Fig. 2 **a** Abdominal computed tomography (CT) showing a left iliopsoas abscess (arrow). **b** Abdominal CT showing a mass causing bowel obstruction near the iliopsoas abscess with dilatation of proximal jejunum (axial plane: arrow). **c** Coronal abdominal CT (arrow)

Fig. 3 **a** Macroscopic finding of cut surface for the small-intestinal lesion revealed a tumor proliferating mainly in the submucosa and muscular layer. **b** Histopathological examination revealed a moderately differentiated adenocarcinoma proliferating mainly in the submucosa and muscular layer and invading the subserosa with regional lymph node metastasis (H&E staining, $\times 10$ magnification). **c** Macro-

scopic finding of cut surface for the small-intestinal lesion. **d** Magnified view of the site marked by the square in **c** (H&E staining, $\times 12.5$ magnification). H&E, hematoxylin and eosin. On the mucosal surface of the jejunal tumor, both cancerous and non-cancerous parts were observed

II or III disease at the time of diagnosis, of which 22% will experience recurrence despite curative surgery [6]. Common sites of recurrence after curative resection of colorectal cancer include the liver, lungs, locoregional sites, and peritoneal metastasis [6]. Metastases from colorectal cancer to the intestines generally occur via peritoneal

dissemination. Hematogenous metastasis to the small bowel from colorectal cancer is rare; the specific incidence rate has not been reported in the published literature. Our patient was diagnosed as having hematogenous metastasis to jejunum from sigmoid colon cancer based on the pathological findings.

Small-intestinal tumors typically present with obstructive symptoms such as colicky pain, distension, vomiting, constipation, and bleeding symptoms, such as fecal occult blood and melena caused by bleeding from tumors [7]. Other presentations include weight loss, palpable abdominal mass, and perforation. In our case, hospitalization was required because of iliopsoas abscess that was associated with a small-intestinal tumor although its communication with the intestinal tract was not confirmed. Iliopsoas abscess was treated conservatively, and the diagnosis of small-intestinal recurrence was made during surgery for repeated bowel obstruction after the treatment of the abscess. In a study, approximately 97% of patients with CRC were shown to develop metastasis within 5 years after curative resection [6]. It was reported that recurrence of CRC at other sites often precedes small bowel metastasis [8, 9]. However, our patient developed recurrence in the small bowel more than 5 years after curative resection. Furthermore, no recurrence was observed at other sites at the time of intestinal metastasis.

The rarity of small bowel metastasis from colorectal cancer, and the nonspecific signs and symptoms at presentation pose a diagnostic challenge. Although the diagnosis has often been made by radiological enteroclysis or CT, the recent advent of techniques such as capsule endoscopy (CE) and double-balloon enteroscopy (DBE) have rendered these tumors easier to detect [10, 11]. Studies have demonstrated the superior ability of CE and DBE to detect small bowel pathology as compared to CT, magnetic resonance imaging, or radiological enteroclysis [10, 11]. However, CE or DBE could not be performed in this patient because of bowel obstruction and acute inflammation due to the gastrointestinal disease.

Metastatic involvement of small intestine is typically associated with a poor prognosis [12]. Metastatic tumors are found owing to the remarkable symptoms, and resection of the tumor is often required to afford symptomatic relief. Kojima et al. found that resection of the metastatic disease in small intestine may improve the long-term prognosis [13]. In the present case, no other metastatic lesions were observed and the metastatic tumor in the small intestine was removed; however, liver metastasis was found 3 months after the surgery and the patient died 18 months after the surgery.

Our case highlights the late occurrence of colorectal metastases at unusual sites, such as the small bowel, potentially more than 5 years after the resection of the primary cancer. The symptoms of metastases to small intestine are variable and the diagnosis is often difficult in spite of the recent advent of techniques such as CE and DBE. Clinicians should be suspicious of this condition in any patient with prior history of colorectal cancer.

Compliance with ethical standards

Conflict of interest The authors have no conflicts of interest to declare. No financial support was received for the work described in this manuscript.

Informed consent The patient provided informed consent prior to treatment and publication.

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