Surgical resection of colorectal recurrence of gastric cancer more than 5 years after primary resection

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1. Introduction

Intestinal metastasis from gastric cancer is rare, although the most common cause of secondary neoplastic infiltration of the colon is gastric cancer.1 To the best of our knowledge, only two reports in the English literature have described lower intestinal metastasis from gastric cancer occurring >5 years after primary surgery.2,3 The characteristics of this situation thus appeared largely unknown. However, we then identified over 30 reported cases in the Japanese literature with or without English abstracts available.4

From January 1999 to July 2012, we performed 1020 gastric cancer surgeries and encountered 3 cases with late-onset lower intestinal recurrence of gastric cancer occurring 9–11 years after primary resection at Obihiro Kosei General Hospital in Japan. We recently reported one of these cases of colon metastasis from gastric cancer, which occurred 11 years after primary surgery.5 Here we report the other 2 cases of late-onset colon metastasis from gastric cancer.

2. Case reports

2.1. Case 1

A 61-year-old man was referred to our hospital with constipation, abdominal distention, and lower abdominal pain. At 52
years old, he had undergone radical total gastrectomy and distal pancreatectomy with regional lymph node dissection. Histological examination revealed poorly differentiated adenocarcinoma involving signet-ring cell carcinoma, categorized as T3N0M0 according to the American Joint Committee on Cancer classification 7th. Surgical margins for the resected primary tumor were free of tumor cells. The patient had received regular follow-up on an outpatient basis for 5 years before being referred to our hospital.

Abdominal computed tomography (CT) showed target-like thickening of the descending colon and moderate accumulation of ascites. Radiographic contrast-enhanced enema and colonoscopy revealed induration and stenosis of the descending colon. The diagnosis was primary cancer of the descending colon.

A small, hard mass was palpated during laparotomy in the middle of the transverse colon, and thus left hemicolectomy and transverse colectomy with mesenteric lymph node dissection were performed. Postoperative course was uneventful. Histological examination of the colon tumor revealed poorly differentiated adenocarcinoma (Fig. 1), showing similar pathological findings to the gastric tumor 9 years earlier. Immunohistochemical staining showed positive results for cytokeratin 7, and negative results for cytokeratin 20 and caudal-type homeobox 2. These findings supported the suggestion that this tumor represented colon metastasis from the previous gastric cancer. The surgical margin on the anal side was positive on pathological examination, with cancer cells spread widely from the submucosal to the muscular layer in all surgical specimens (Fig. 2). Many lymph node metastases were identified in resected specimens. The patient refused chemotherapy after surgery, and remained alive with cancerous peritonitis and skin metastasis as of 17 months later.

2.2. Case 2

A 46-year-old woman presented with constipation, abdominal distention, and lower abdominal pain. At 37 years old, she had undergone radical total gastrectomy and distal pancreatectomy with regional lymph node dissection for poorly differentiated adenocarcinoma identified as T3N2M0 signet-ring cell carcinoma according to the AJCC 7th. The surgical margins of the primary tumor were free of tumor cells. The patient then underwent adjuvant chemotherapy and received regular follow-up on an outpatient basis for 5 years. At 43 years old, 6 years after primary resection, she was diagnosed with an ovarian tumor and underwent ovariectomy. The pathological diagnosis was Krukenberg tumor (metastatic moderately and poorly differentiated adenocarcinoma).

We performed magnetic resonance imaging (MRI) and abdominal CT, both of which showed rectal tumor invading the uterus. Radiographic contrast-enhanced enema and colonoscopy revealed induration and stenosis of the rectum. Metastatic gastric cancer of the rectum was diagnosed after histological examination revealed moderately to poorly differentiated adenocarcinoma resembling the gastric cancer that had occurred 9 years earlier. Low anterior resection and hysterectomy were performed with mesenteric lymph node dissection. The postoperative course was uneventful. Pathological examination revealed that tubular adenocarcinoma with moderately and poorly differentiated components, similar to the pathological findings of the previous gastric tumor, had invaded both the rectum and uterus (Figs. 3 and 4). Two metastases were present in the resected mesenteric lymph nodes. The patient subsequently underwent chemotherapy for 1 year, and remained alive without recurrence as of 24 months later.

3. Discussion

Recent reports from Japan and Korea have shown a late recurrence rate of about 6% among patients with advanced gastric cancer who survived >5 years post-gastrectomy. Intestinal metastasis from gastric cancer itself is rare, although the most common cause of secondary neoplastic infiltration of the colon is gastric cancer.
We reviewed reported cases of metastatic colon cancer from gastric cancer in the literature, including those with only the abstract in English (Table 1).

We performed a search of the literature using both PubMed and “Ichyu-shi”, a Japanese literature search engine. Since 1980s, we found 21 cases of colonic metastases occurring at least 5 years after primary resection, once cases from gastric cancer the Japanese literature with English abstracts were included.2,4,7-17 Nineteen of the 21 cases had undergone various resections, and the median disease-free interval was 74 months. The most frequent site of metastasis was the transverse colon. The majority of metastatic cases originated from poorly differentiated carcinoma. Eleven cases showed regional lymph node metastasis. Median survival from surgery for metastatic lesions was 26 months, and 2 cases survived >3 years.

The transverse colon was the most frequent site of gastric cancer metastasis to the colon. A previous report showed a similar frequency.18 Transverse colon metastasis represents an example of direct invasion or extension. Several authors have suggested that a common pathway of tumor spread to the gastrointestinal tract is via mesenteric reflections.19 In our report, Case 1 was caused by direct invasion through the mesentry and intraluminal dissemination, whereas Case 2 would have involved intraperitoneal seeding, because the patient had a history of a Krukenberg tumor originating from gastric cancer. However, she showed no other signs of intraperitoneal seeding at other sites.

Several reports have suggested that surgery for selected patients with recurrent gastric tumors is worthwhile, due to the potential survival benefit from surgical intervention. Unfortunately, one of our patients (Case 1) had systematic metastasis, but the other case (Case 2) showed relatively long survival.

Our data (review of literature) showed a median survival time of 26 months after surgery for metastatic gastric cancer to the colon. Nunobe et al. reported outcomes of surgery with curative intent for 36 selected patients with locoregional recurrence.20 Their data showed that median survival after surgery was about 23 months, and 7 of the 36 patients (19.4%) with recurrent gastric cancer achieved long-term survival >3 years after surgery.

Considering these reported data, resection of late-onset colorectal recurrence appears worthwhile for selected patients because of potential gains in long-term survival. When resection is to be performed, careful consideration of the surgical margins is needed due to the likelihood of lymph node metastases and the intramuscular spread of tumor cells.

**Consent**

Written informed consent was obtained from both patients for publication of this case series and accompanying images. Copies of the written consent are available for review by the Editor-in-Chief of this journal on request.

**Conflict of interest**

None of the authors have any conflicts of interest to declare for this case report.
This is a case report on the surgical treatment of metastatic gastric cancer. The authors describe their experience with two cases of metastatic colorectal cancer after resection of a colorectal carcinoma. They discuss the clinicopathological aspects of the cases and the surgical techniques used.

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