Solitary Splenic Metastasis from Gastric Cancer: Report of a Case

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Abstract
We report a rare case of metachronous and solitary metastasis to the spleen from gastric cancer. A 69-year-old man who had undergone a distal gastrectomy for gastric cancer 48 months earlier was found to have a solitary lesion in the spleen, and an increased serum carcinoembryonic antigen (CEA) level. The patient underwent a laparotomy for suspected metastasis to the spleen. At laparotomy, a tumor was found in the upper pole of the spleen without involvement of other organs, and a splenectomy was performed. Histological examination confirmed that the splenic tumor was a well-differentiated adenocarcinoma similar to the primary gastric cancer. The postoperative course was uneventful and his serum CEA decreased to within normal levels. The patient died of multiple metastases to the liver and peritoneal dissemination 40 months after the splenectomy.

Key words Splenic metastasis · Gastric cancer

Introduction
Splenic metastasis from gastric cancer is uncommon, but once it occurs, it is usually associated with extensive involvement of other organs. Therefore, even if the tumor is isolated in the spleen and removed, the prognosis is poor. In Japan, only ten cases of resectable solitary splenic metastasis from gastric cancer have been reported. We report a case of solitary splenic metastasis from gastric cancer in a patient who survived for 40 months after splenectomy.

Case Report
A 65-year-old Japanese man underwent a distal gastrectomy with lymphadenectomy for Borrmann type-2 gastric cancer of the antrum at Hamamatsu Medical Center. The histological findings were tub1, infβ, ss, and n2, fulfilling the criteria for stage IIIa according to the Japanese Classification of Gastric Carcinoma. After the operation, the serum carcinoembryonic antigen (CEA) level, which had been elevated at 9.7 ng/ml prior to gastrectomy, decreased to within the normal range (Fig. 1). After chemotherapy with mitomycin C, he was discharged and subsequently given oral 5-fluorouracil and intravenous lentinan.

Almost 3 years later, his serum CEA level was found to be increased, but an abdominal computed tomography (CT) scan done 6 months after this did not reveal any remarkable findings. The serum CEA level rose to 185 ng/ml 9 months later and another abdominal CT study revealed a low-density area, 4.0 × 3.8 cm in size, in the upper pole of the spleen without any notable findings in other organs (Fig. 2). Angiography of the splenic artery did not show staining of the tumor. Under a suspected diagnosis of solitary metastasis to the spleen from gastric cancer, an operation was performed in August 1993, 50 months after his initial surgery. At laparotomy, no lymph node involvement, hepatic metastasis, or peritoneal dissemination was seen. The tumor was located in the upper pole of the spleen. Splenectomy was performed, and a cross section of the resected specimen showed a tumor, 4.5 × 4.0 cm in size, and yellow, with signs of hemorrhage (Fig. 3). Histological examination revealed well-differentiated adenocarcinoma consistent with the features of the primary gastric cancer (Fig. 4). The serum CEA level decreased to within the normal range immediately, and the patient was discharged 16 days after the operation. Chemotherapy with oral uracil-tegaful and intravenous lentinan was given for about 2 years after the operation.

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The serum CEA level showed a slight increase again 1 year later, but abdominal CT failed to show any recurrent lesions. Another year later, an abdominal tumor was palpated in the left lower abdomen, which was confirmed, without para-aortic lymphadenopathy, by abdominal CT. A third operation was performed 1 year later, revealing a solitary tumor in the mesentery of the sigmoid colon, and a sigmoidectomy was performed. No swollen lymph nodes along the para-aortic lesion, peritoneal dissemination, or retroperitoneal carcinomatosis were seen. Histological examination revealed metastasis to the mesentery from the gastric cancer and nodal metastasis along the superior rectal artery. Carmofur was given postoperatively.

A fourth laparotomy was performed 1 year later for suspected intestinal obstruction due to peritoneal dissemination. This laparotomy revealed peritoneal dissemination throughout the abdominal cavity and the obstructive lesion was dissected. The patient died of multiple metastases to the liver and peritoneal dissemination 4 months later, and 40 months after the splenectomy.

**Discussion**

About two thirds of all cases of splenic metastasis arise from hematoneoplasms such as malignant lymphoma or leukemia. In an autopsy series of 7,165 cases of carcinoma, 312 and 22 cases of splenic metastasis were found among 4,404 cases of metastases (7.1%) and 533 cases of gastric cancer (4.1%), respectively. Splenic metastasis