Long-Term Survival After a Surgical Resection of Pulmonary Metastases from Gastric Cancer: Report of a Case

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Abstract
We describe a patient who survived for a prolonged period after repeated resections of pulmonary metastases from gastric cancer. A 59-year-old man underwent a distal gastrectomy for gastric cancer. A right middle lobectomy and a left lower lobectomy were performed for metastases from gastric cancer at 34 months and 82 months after the initial gastric resection, respectively. The patient died of cerebral infarction 65 months after the first lung resection, with no further relapse. To our knowledge, long-term survival after resection of pulmonary metastases from gastric cancer has only been reported in 3 patients previously. We herein review the literature and discuss the role of surgery in such patients.

Key words Gastric cancer · Pulmonary metastasis · Resection

Introduction
Few reports have described a pulmonary resection for metastasis from gastric cancer.1–5 Most patients with pulmonary metastasis from gastric cancer have carcinomatous lymphangitis or carcinomatous pleuritis. In contrast, nodular lesions are rare.6 A surgical resection is therefore usually not indicated. In addition, the surgical outcomes in patients with isolated resectable pulmonary metastasis from gastric cancer have been extremely poor,1,5 with few long-term survivors.2,4 We herein describe a patient who survived more than 5 years after a resection of pulmonary metastases from gastric cancer.

Case Report
A 59-year-old man underwent a distal gastrectomy for multiple gastric cancers. There were two lesions. One was an ulcerative type with a sharply demarcated and raised margin (type 2) cancer measuring 4.5 × 4.3 cm, located on the posterior wall of the lower third of the stomach. The other lesion was superficial depressed type (0–IIc) cancer measuring 1.5 × 1.0 cm, arising in the lesser curvature of middle third of the stomach. A microscopic examination of the type 2 cancer revealed a poorly differentiated adenocarcinoma invading the muscularis propria with moderate lymphatic and venous invasion (Fig. 1). Lymph node metastasis was found in 3 of 33 dissected lymph nodes (n1). The type 0 IIc lesion was a well-differentiated tubular adenocarcinoma invading the muscularis mucosa. Adjuvant chemotherapy with doxifluridine was given for 2 years after the gastrectomy.

Thirty-four months after the gastric resection, a solitary nodular shadow was detected on chest radiography and computed tomography (CT) (Fig. 2). A bronchoscopic biopsy failed to yield a definite diagnosis. However, primary lung cancer was suspected, and a right middle lobectomy with lymph node dissection was done 38 months after the gastrectomy. Two lesions were found in the middle lobe on a pathologic examination. One measured 3.6 cm in diameter while the other measured 0.4 cm. Both lesions were moderately differentiated adenocarcinomas, thus suggesting that they were metastatic lung tumors from gastric cancer (Fig. 2). There was no apparent lymph node metastasis. Adjuvant therapy after a pulmonary resection was withheld at the patient’s request. Forty-eight months after the pulmonary resection, a solitary nodule newly appeared in the left lower lobe on CT (Fig. 3). The size of this nodule increased during the next 6 months. A left lower lobectomy was performed 54 months after the initial pulmonary resection. Histologically, the lesion mea-
Discussion

A pulmonary resection for metastasis from gastric cancer is extremely rare for several reasons. First, the incidence of pulmonary metastasis alone after a resection of gastric cancer is very low. Koga et al. reported that pulmonary metastasis was found at the first relapse in 7 of 1314 gastric cancer resections (incidence, 0.5%).7 Kanemitsu et al. reported that hematogenous metastasis limited to the lung occurred in only 7 of 3076 curative gastrectomies for gastric cancer (incidence, 0.2%).1 Second, most pulmonary metastases from gastric cancer are associated with carcinomatous lymphangitis, malignant pleural effusion, or multiple metastases.6 The incidence of surgically resectable solitary metastases was reported to be only 0.1%.1 In addition, the outcomes of a resection for pulmonary metastasis from gastric cancer are very poor.1,5 Kanemitsu et al. described four patients who underwent a pulmonary resection for metastatic gastric cancer and died of recurrent systemic disease a median of 24.3 months after lung resection.1 Tamura et al. also reported that all four of their patients died within 19 months after a resection of pulmonary metastasis from gastric cancer.5 The median survival time for the combined total of eight patients reported by Kanemitsu and Tamura was 18.5 months. Surgery remains the only method for determining whether solitary pulmonary nodules are primary or metastatic lung cancer in patients with a previous history of gastric cancer.

To our knowledge, only three patients with a prolonged survival after resection of pulmonary metastasis have been reported previously.2–4 Our patient is thus the

Fig. 1. Microscopic examination of a type 2 tumor revealed a poorly differentiated adenocarcinoma of the stomach (H&E, ×10)

Fig. 2. Left Chest computed tomography (CT) scan showing a nodule with a maximum dimension of 3.6 cm in the right middle lobe. Right A microscopic examination revealed a moderately differentiated adenocarcinoma (H&E, ×10)

Fig. 3. Left Chest CT scan showing a new nodule 2.4 cm in diameter in the left lower lobe. Right A histologic examination revealed a moderately differentiated adenocarcinoma (H&E, ×10)